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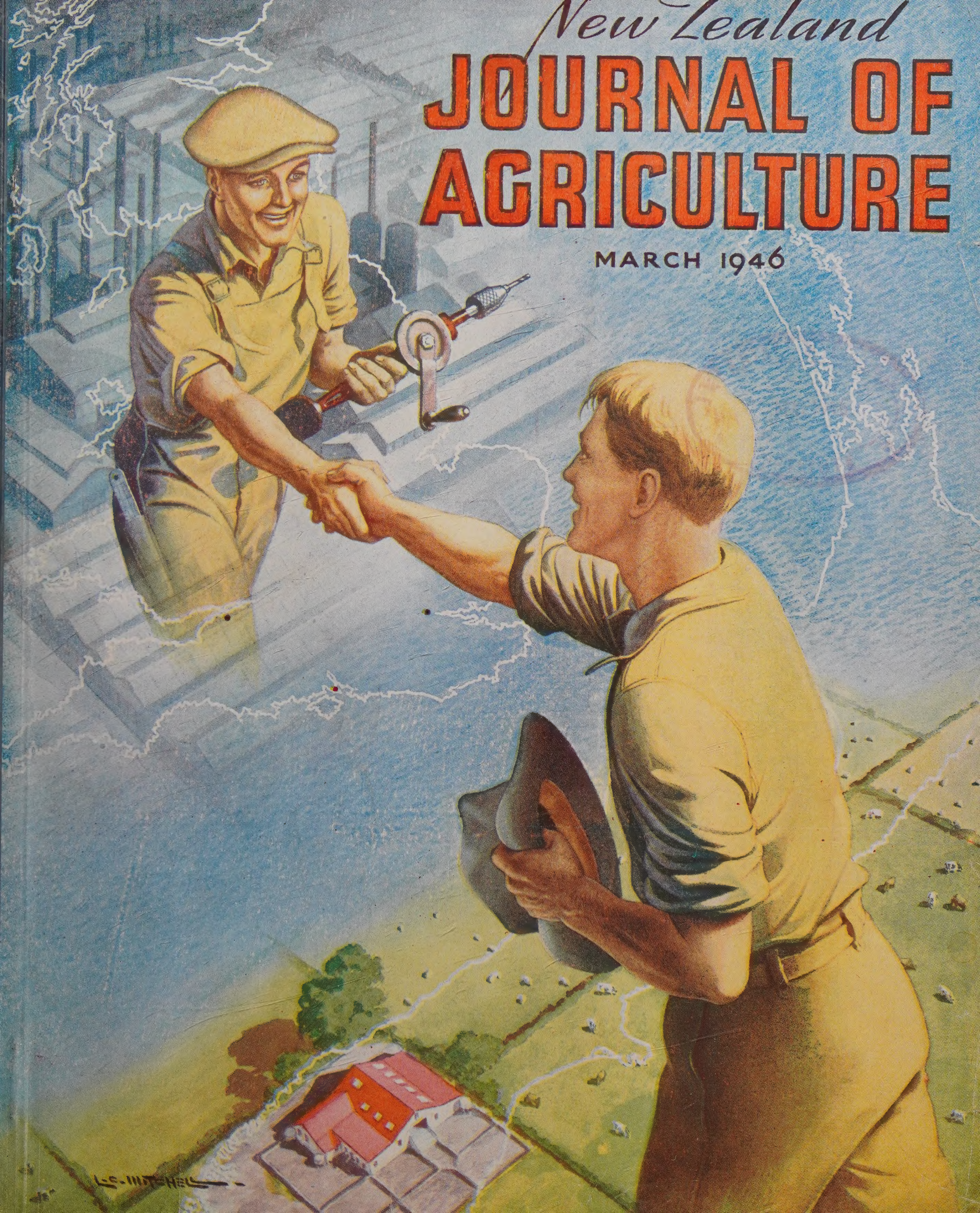
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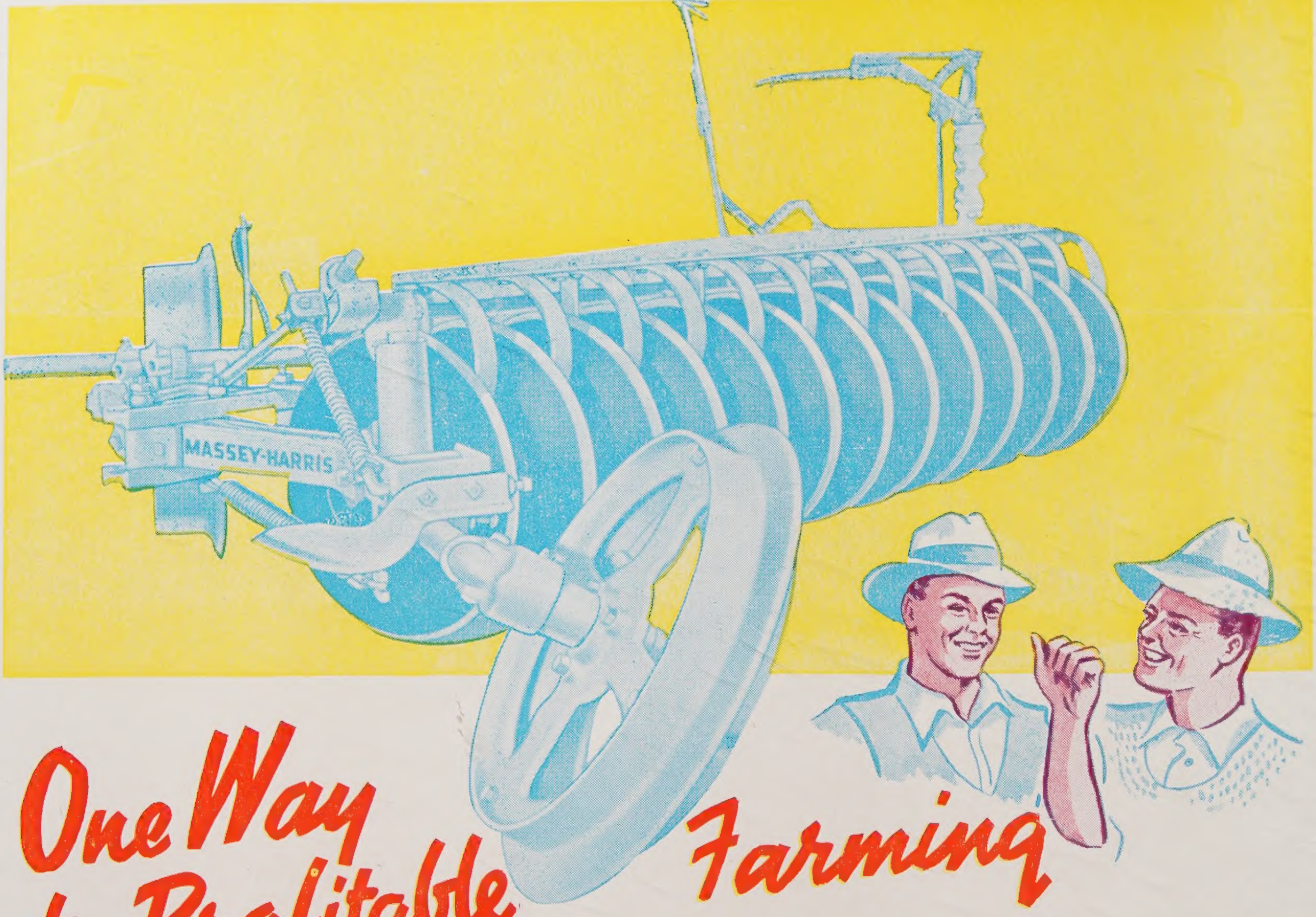

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PLEURISY IN PIGS

Rejections Could Be Reduced

BECAUSE of pleurisy carcasses of pork for export are at times rejected; it is essential, therefore, that the question of pleurisy in pigs should be brought to the notice of pig-breeders. For New Zealand's export trade high-quality pigmeat is imperative, and provided reasonable care is taken in the breeding, feeding, and management of pigs the percentage rejected because of pleurisy should be reduced very considerably.

FOR the purpose of enabling pig-breeders to overcome this present loss in their export trade, the following suggestions are offered.

Pleurisy in pigs may develop at an early age; the majority of cases are mild. Animals not badly affected may be dull for a few days and disinclined to feed as well as usual. The animal survives this early stage, but may not be so thrifty as some of its fellows. The pig is eventually sent to slaughter in good condition, but when eviscerated it is found that the lungs are adhering to the chest wall; this adherence is commonly known as pleurisy. It would be an easy matter to strip out the adhering parts of lung, but such a carcass might not be accepted by the inspecting authorities in Great Britain. In such circumstances, we could not be said to be exporting a high-quality product.

Forms of Pleurisy

Pleurisy in several forms may be seen in the pig at time of slaughter. The pleurisy may be due to tuberculosis, and for this the whole carcass is condemned. Again, it may be an acute type of pleurisy contracted a few days before slaughter when the carcass is also condemned. These account for a very small percentage of the cases of pleurisy seen at the abattoirs and slaughterhouses. Cases of septic pleurisy (abscess formation) are also seen in pigs at the time of slaughter. In most cases, however, pig carcasses are rendered unfit for export by simple and preventible pleurisy, the adhesions being present in what would otherwise be classed as a first-class exportable product.

Material reduction of this preventible pleurisy by the provision of improved methods of housing, feeding, and management could be effected on many New Zealand pig-farms.

Pleurisy in pigs may be contracted at an early age. Authorities advise that the sleeping quarters of a sow with litter should be dry, warm and sanitary. Good overhead ventilation and sunlight help to keep them in this condition. The quarters should be comfortable—cool in summer and warm in winter—and free from draughts. These conditions can be attained either in fattening pens or in individual houses. Farmers are advised to give each sow with litter a separate house till the pigs are weaned.

Exercise is highly important and is one of the chief means of keeping the sow and her litter healthy. In cold weather lack of exercise may precipitate pleurisy in young pigs, unless warm, comfortable, and hygienic housing is provided for the litter. Little pigs should not be exposed to cold winds or cold rains.

When weaning has taken place special care is necessary to see that the young pigs do not receive a check. The system of weaning recommended is the "creep" method. For the last two weeks before weaning, a ration which will prevent a check when the mother's milk is finally removed is recommended. To compensate for the loss of fat in the sow's milk, the use of cod-liver oil at the rate of one teaspoonful per pig per day in the concentrates fed in the creep will help prevent a check—too commonly seen among piglets of this age. Their food very often consists mainly of skim-milk or whey, with a limited quantity of meat-meal or other concentrate. These should still be supplemented with a small quantity of cod-liver oil. This ensures a supply of vitamins A and D, and is particularly valuable for early spring litters. The direct nutritive effect of cod-liver oil, apart from its vitamin content, is most important in replacing fat which has been removed from the cows' milk. The vitamin A of cod-liver oil is necessary for the growth and general well-being of the growing pig. Vitamin D is known as the anti-rachitic principle. Its absence from the ration causes rickets in young pigs. Cod-liver oil supplies both of these vitamins.

Avoid Overheating

Sound practice during the winter is to separate the pigs into small numbers; large numbers may be run

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together in the summer. It is also advisable to separate into small numbers (about 8-10) at night. By this procedure the pigs do not pile up and become overheated. An overheated pig in the winter and cold spring months is very likely to contract pleurisy. Young, growing pigs subjected to strong sunlight during the warmer months of the year and inadequately protected at night are also liable to contract pleurisy.

Although worms may be present on many pig farms where fairly large numbers of pigs are kept in rather close quarters, the worms themselves do not play a big part in bringing on pleurisy. Pigs kept in confinement may frequently be heard coughing. This is invariably due to the presence of worms in the bronchial tubes. Similar worms infest calves and lambs; these animals seldom show evidence of pleurisy.

Although an increase in the starch and fat content of winter and spring rations of growing and fattening pigs is desirable, it is difficult to see how this can be brought about if due regard is paid to the economic production of pig-meat. If the price of butterfat is maintained farmers cannot be expected to use any whole milk for the feeding of litters after weaning. The use of adequate amounts of cereals at present-day prices is economically unsound except in grain-growing districts. The combination of these factors plays such an important part in swine production in New Zealand that one is forced to the conclusion that many litters of pigs are inadequately fed, and are therefore prone to pulmonary and other diseases. The utilisation of fresh pasture and roots, together with a balanced ration of concentrates, would no doubt improve matters from a dietetic point of view and would be economically sound.

The poor pig-housing conditions on many farms, inadequate protection from cold draughts, and the poor drainage and insanitary conditions of many pig areas, when combined with an inadequate food supply, must be the main underlying causes of this pleurisy in pigs.

In permanent, concrete pig quarters where large numbers of pigs are concentrated together for fattening purposes it is desirable that the system of management be given consideration. Every pig-keeper should aim at drafting his pigs according to their size. As overcrowding is detrimental to the welfare of the pig, the number in each enclosure should be kept as low as possible. A raised platform, which can be kept dry and warm with straw bedding, provides comfortable sleeping quarters.

In the past the economic conditions have been such that swine husbandry and its relation to New Zealand's great dairying industry have not been fully realised. There is ample evidence that the income derived from the production of pork in European countries in pre-war years was most attractive. With the great advantages possessed by this country in climate and in the availability of enormous quantities of milk by-products the pig industry in New Zealand has an assured future.

◆

Wool-marking Preparations

INCLUDED in legislation passed in the recent session of Parliament were several clauses in the Statutes Amendment Act, 1945, which serve to amend those portions of the Stock Act, 1908, dealing with the branding or wool-marking of sheep. For a long time there have been complaints from wool buyers both in this country and abroad about the serious losses caused by harmful substances being used for wool marking. These substances cannot be removed by scouring the wool and give rise to bad blemishes in the semi-finished or finished fabrics, entailing considerable economic loss. Consequently buyers have to make allowances in valuing wool for brands which are present, and brokers and freezing works have to remove affected wool, which is worth on the average 5d. to 6d. per lb. less on this account. The aggregate annual cost to the country is very considerable.

The amendments which come into force on May 1, 1946, embody the following main points:—

1. **Prohibit the use for wool marking of any substances other than those approved by the Minister of Agriculture. The approval will be based on practical tests which will ensure that the substances approved can be scoured out.**
2. **Nobody may sell any substance for wool marking unless it has been officially approved, and is in a container or package bearing a label to that effect.**
3. **No person shall mix with or add to any approved wool-marking preparation any substance other than a clear volatile solvent that has no injurious effect on wool.**

This provision is designed to prevent the dilution of approved branding fluids with such substances as linseed oil, turpentine, etc., which cause even the best brand to set hard and prevent its removal by scouring.

Penalties are provided for breaches of the above amendments, and it is incumbent on all firms manufacturing or selling branding preparations to take steps to have them submitted for testing and approval by May 1, 1946.

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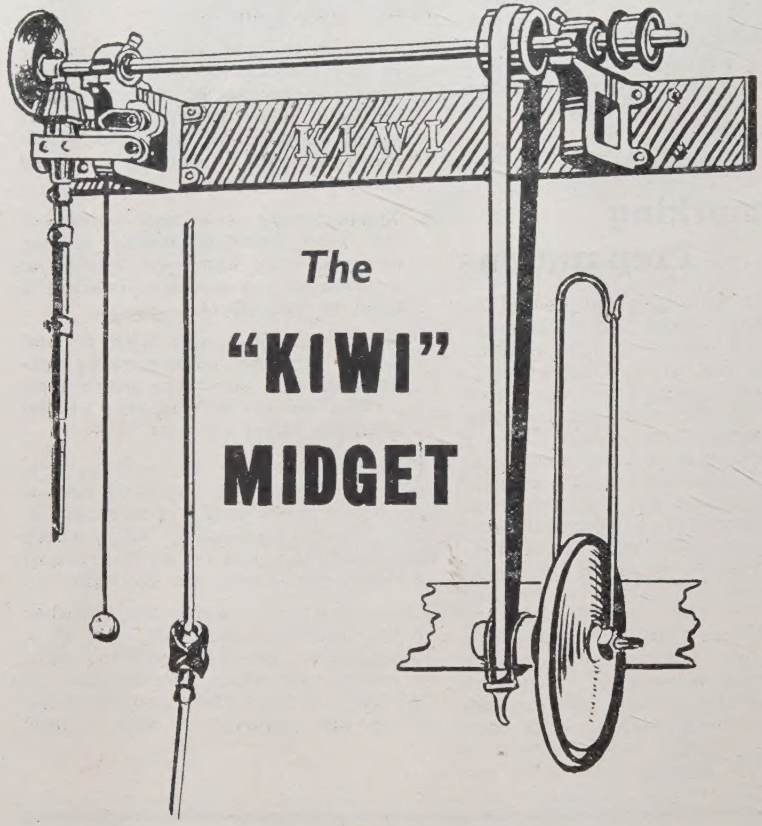

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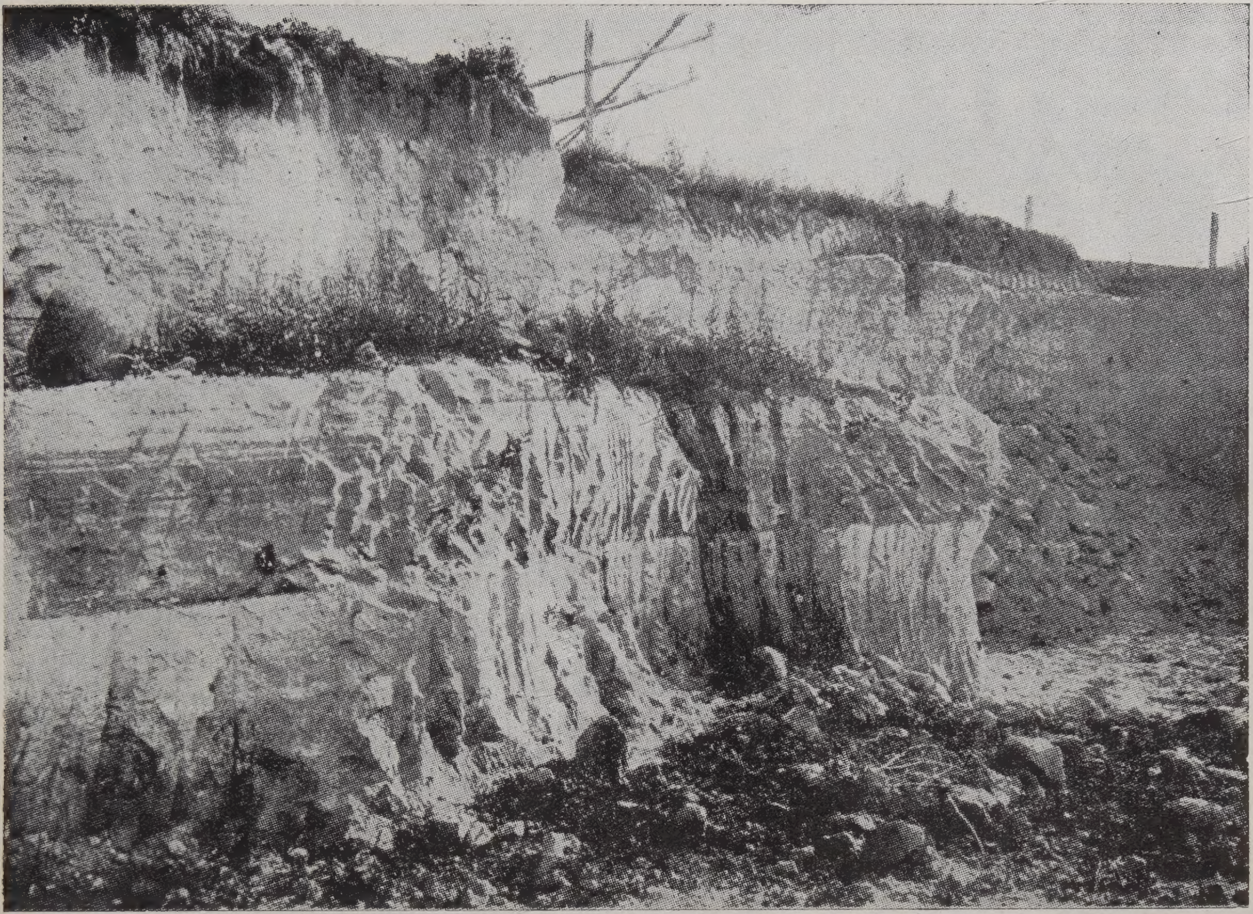

BULK DISTRIBUTION OF LIME

Greater Availability With New Methods

WITH the great increase in the use of lime, improved methods of handling it will undoubtedly be necessary in the future. In this article R. H. Scott, Field Economist, Christchurch, discusses the problem of bulk distribution of lime and describes the method now being operated from the works of the Local Lime Co. Ltd., Fairlie, Canterbury.

THE growth in the use of lime has been phenomenal over the past few years, and the peak in its use is not yet in sight. In 1898, to encourage its use by assisting farmers to obtain it at a reasonable price, the Government introduced a free railage concession up to 100 miles. In that year 12,450 tons were railed under this subsidy scheme; 10 years later 16,000 tons were railed; by 1930 it had reached 208,000 tons, and over the past six years has been as follows:—

Year.	Tons.	Year.	Tons.
1939-40	392,980	1942-43	588,000
1940-41	545,000	1943-44	652,000
1941-42	578,000	1944-45	698,000

Of the total of 698,000 tons for 1944-45, 109,000 tons were railed in Canterbury, but this, of course, does not represent the total amount of lime used in this district, which is estimated at 130,000 tons for this period.

The transport of this quantity by rail and its distribution on the farm are a big task, and existing methods are inadequate. The Railways Department is handicapped by the excessive time taken in some instances to unload wagons, the lime companies have difficulty in obtaining labour to bag the lime, and the farmer complains that he cannot obtain lime when he requires it. These and other difficulties are likely to become progressively worse with the anticipated further increase in the use of lime, and some improvements in handling methods must be devised.

Bulk Distribution

The problem of distribution has exercised the minds of a number of people and mention has been made in some quarters of the transport of lime in bulk, a method which may eventually have to be partly adopted in some areas in New Zealand. What is envisaged under this scheme is that the lime will be loaded loose into railway wagons at the works and conveyed to focal points

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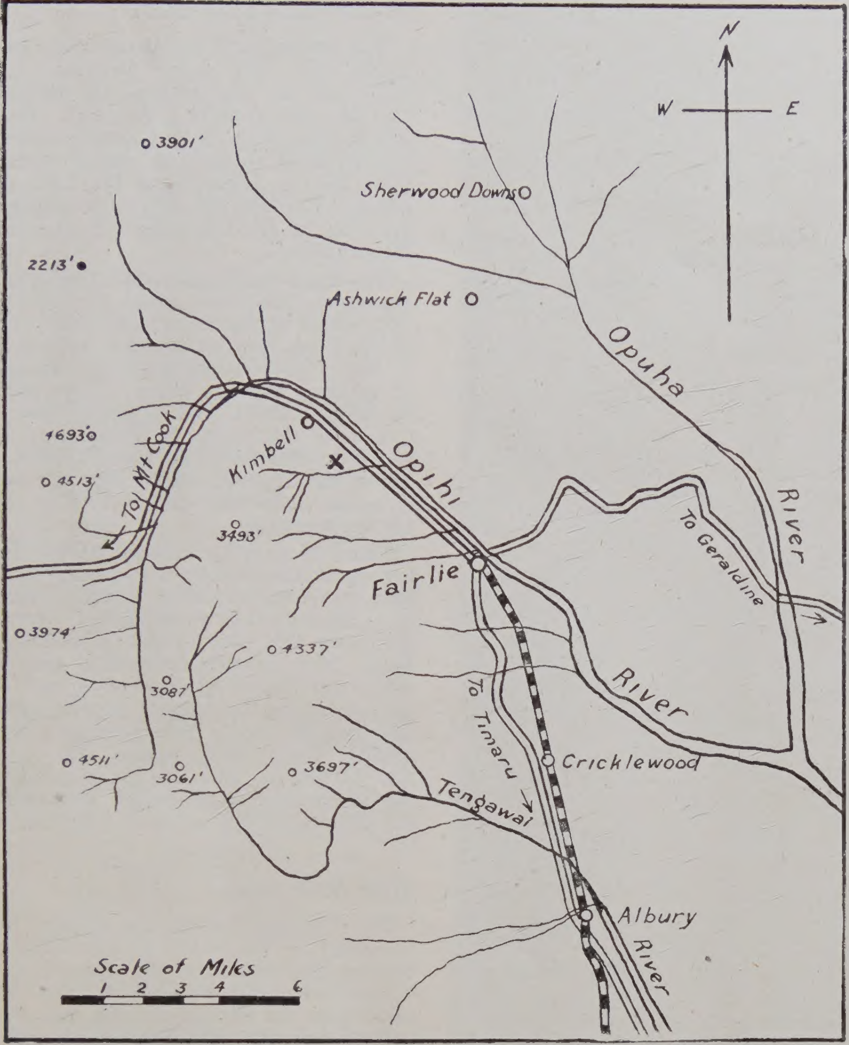


Map of locality served by Local Lime Co. Ltd., Fairlie.

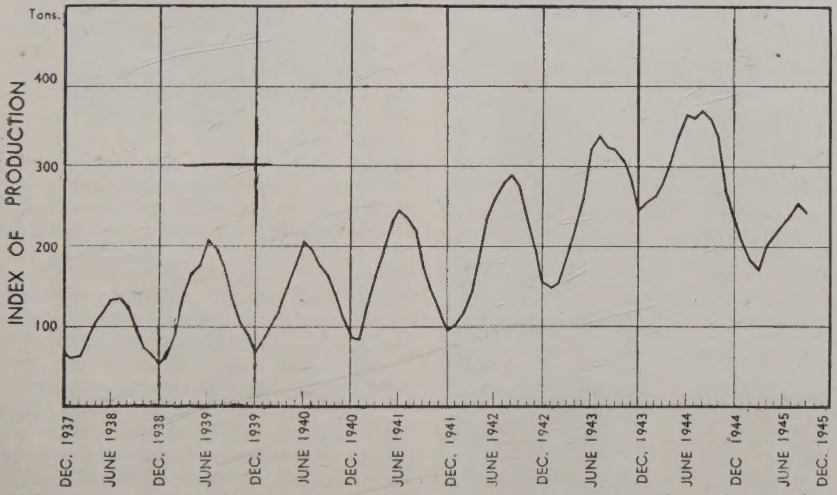


Fig. 1—Seasonal variation in production of lime at a Canterbury limeworks. The graph shows that peak production months range from May to August and for these months in 1945 production was not so high as for the same period during the three previous years, due to the very wet winter preventing farmers served by this company from using lime and the snowstorm in July when the works were unable to operate.

where it can be stored in depots either in silos or bulk sheds, from which it can be taken on to the farms possibly by cartage contractors who will undertake the spreading.

Naturally there are many difficulties to be overcome, but with the co-operation of the parties concerned it should be possible to bring about the desired re-organisation in handling methods.

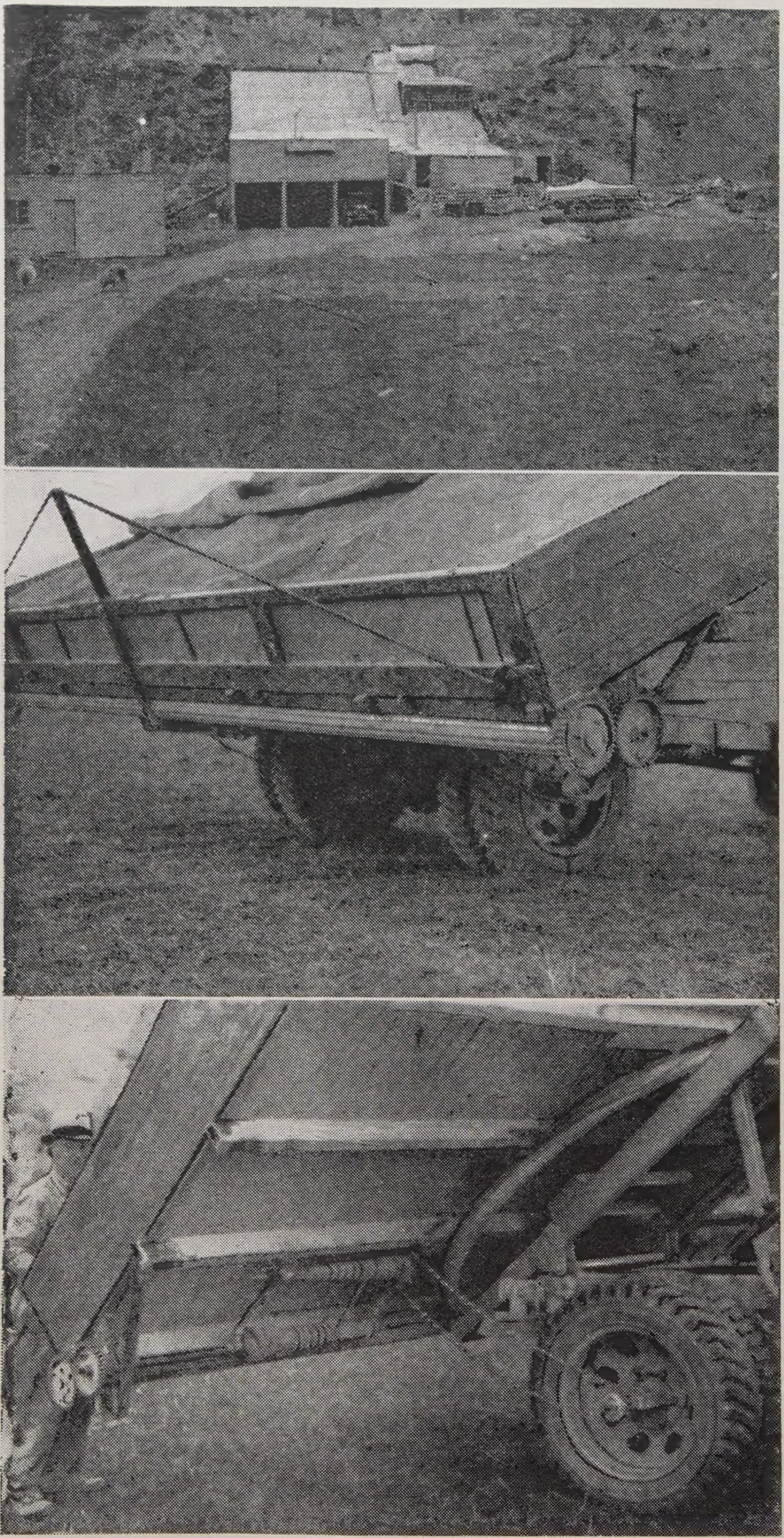
The advantages claimed for this method of handling are—

(a) A smoother monthly production of lime at the works should be possible. Although farmers may not be requiring lime at a particular time, the limeworks can still be producing and forwarding the lime to the bulk depots, thus building up reserve supplies.

The graph (Fig. 1) shows the considerable fluctuation between the peak producing months and the slack producing months, and it will readily be realised from this that lime companies must have difficulty in organising the running of their works. For a period of the year the plant will be operated to full capacity, while for the remainder of the time it will be producing much below capacity. To obtain the necessary labour to cope with the peak demand will be another difficulty. Also at the rush periods many orders must be considerably delayed and in some cases cancelled.

(b) It should be possible to have a quicker turn-round of railway wagons. Under present conditions if a farmer to whom lime is consigned is doing other work or the weather is unfavourable when it arrives at the siding, the truck may stand for a period before it is unloaded. With bulk depots the lime could be unloaded immediately on arrival and the railway wagons released despite weather conditions.

(c) The farmer should be able to obtain lime when he requires it; the silos or bulk depots will always contain a reserve supply which can be drawn on. Last winter in Canterbury excessive wet weather and snow prevented some of the limeworks from working for periods, and orders which could not be fulfilled piled up. If there had been storage depots at focal points, supplies could have been obtained from these, thus causing little inconvenience to farmers.



Upper—The works with the bulk sower drawn up under the loading shed. Middle—The grooved roller which governs the amount of lime spread. Lower—Chain drive from back axle and tapered pulleys which allow speed of roller to be adjusted.

A Fairlie Experiment

The method of bulk distribution outlined will suit some districts, but will not be applicable to others, such as those away from rail communication, and in this connection it is interesting to observe what is being done by the Local Lime Co. Ltd., at Fairlie, Canterbury, which is experimenting in another direction in bulk distribution.

The company took over an existing works at Kimbell, some five miles north-west of Fairlie on the main road to Mt. Cook, and, as its name indicates, it was incorporated with the object of catering for the needs of the surrounding district. When the company took over the buildings were renewed and extended and new plant installed under the supervision of one of the directors, who has really acted as an advisory engineer.

There is nothing unusual about the layout of the works; the quarry face lies above the buildings and the rock is bulldozed to a chute, down which it passes into the primary crusher. From here it goes through a rotary drier and thence to the pulveriser, a hopper taking the finished product into the storage bins. The bagging and loading shed is built against the bins, and lorries or the company's bulk sower can draw up under the shed for direct loading as shown in upper left.

The Bulk Sower

The company, with the object of catering for the needs of the Fairlie district and assisting the farmer to obtain lime on his farm, decided to undertake the spreading, and has experimented with a bulk sower. An old truck was fitted with a platform attached to a turntable. The platform is 15ft. long, 6ft. 6in. wide, with sides 1ft. 3in. deep; it is divided into three sections, each section capable of holding 1 ton of lime, giving a total capacity of 3 tons. The platform can be turned and elevated, which enables a spread 15ft. wide to be made on a paddock. The truck when spreading travels at a uniform speed and the amount of lime spread is governed by the revolutions of a grooved roller shown in middle left, these revolutions being regulated by adjusting the belt on the tapered pulleys (lower left). The chain drive from the back axle is also shown. The angle of tip of the platform when spreading is approximately 25 degrees, and to prevent the lime from falling to the back baffles are placed across each section of the platform, leaving a space of 2in. from the floor to allow the lime to pass under.

To fit out the truck it was necessary to use make-shift materials and parts, which naturally reduces the efficiency of the sower, but in spite of this a workmanlike job has been made and it is a credit to the ingenuity of the builder. It has several unfavourable features, such as its limited capacity of 3 tons, but these are fully realised by the principals of the company, who look upon it as an experiment and who, no doubt, will use the knowledge being gained to effect further improvements. Among other things they propose to utilise a trailer of a 3-ton capacity, so that on each trip a total load of 6 tons will be taken on a paddock; also they have in view a method of partly overcoming the difficulty of sowing in windy weather.

Advantages which can be claimed for the existing sower are—

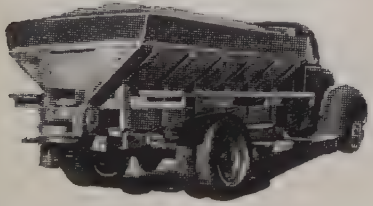
(a) **Only one man is required to operate it.**

(b) **The work of spreading is not as dirty as with sowers fitted to the back of an ordinary truck.**

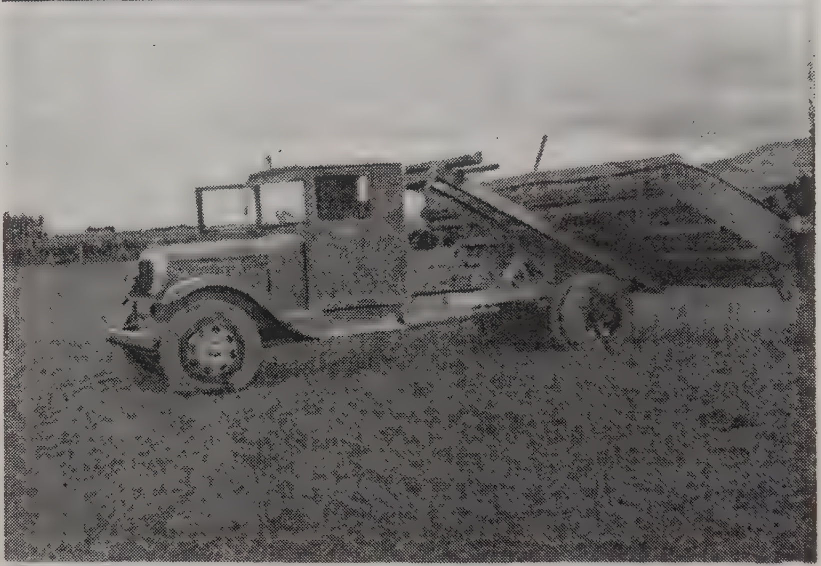
Authority has been granted to the company to operate the sower up to a distance of 15 miles from the works, which enables all of the district surrounding Fairlie to be covered. In addition to undertaking the spreading of the lime the company also sells bagged lime to farmers in the district.

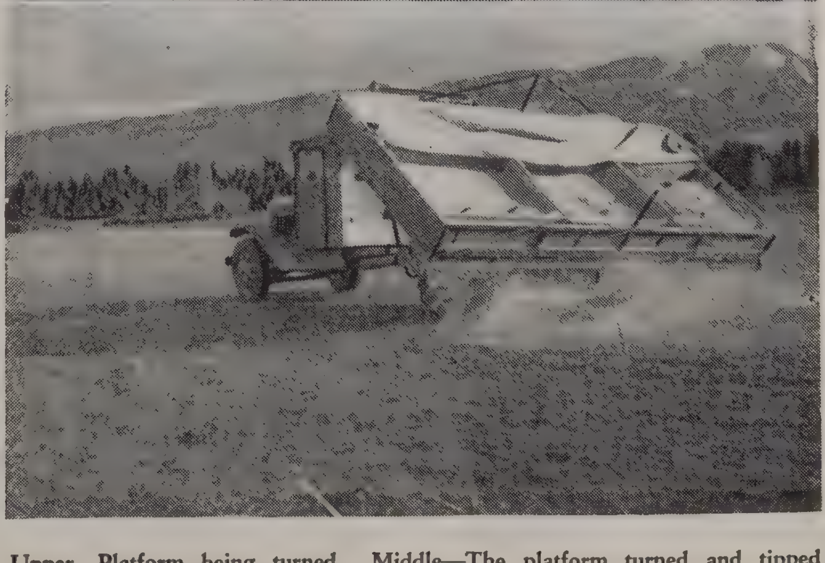
There are a number of other limestone deposits in South Canterbury some distance from the rail, and if some of these were worked by units similar to that at Kimbell, it should be possible to make lime available to farmers in a considerable area of South Canterbury where it is at present unobtainable. This is a matter which will, no doubt, be kept in view by the Local Lime Co. Ltd.

Bulk Distribution in U.S.A.



The method of bulk distribution adopted by the Local Lime Co. Ltd. is similar to that adopted by some of the large lime companies in the U.S.A., which use special trucks similar to the one illustrated with capacities ranging from 5 to 15 tons. The lime is fed through a chain feed on to a revolving disc at the back; the disc is driven from the back axle and, according to the speed of the truck, spreads from 35 to 45ft. are made. Some objections to this method of spreading are that coarser lime is thrown to the outer edge of the spread, while finer particles go towards the centre; but the trucks are extensively used in the U.S.A. and have apparently proved suitable to conditions in many parts there. In some instances fleets of these spreaders are





Upper—Platform being turned. Middle—The platform turned and tipped ready to start sowing. Lower—The bulk sower in operation.

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employed and travel considerable distances from the works.

In any re-organisation in the distribution of lime in New Zealand units like that at Kimbell operating away from the rail would have great value. Although it is still in the experimental stage, and commenced operations in one of the worst seasons on record in Canterbury, there appears every prospect of the eventual success of this method. It will bring lime to farmers who otherwise would be unable to get it, and it is a step in the direction of eliminating the bagging of lime.

Answer to Correspondent

Blowfly Strike in Lambs

Mr. S.H.S., Dannevirke:—

Blowfly has been bad in places this year through the late shearing owing to broken weather and shortage of shearers.

In dozens of instances I have observed that though a lamb may have been badly struck the maggots have left and the sores have dried up completely. In other cases the maggots seem to show no signs of leaving. Can you suggest any reason for this? I have wondered if, in the cases where the maggots have left, the lambs were struck by a different kind of fly.

LIVESTOCK DIVISION:—

It is rather unusual for the maggots to leave the sheep and the sore to dry up without treatment. Under very favourable conditions it is stated that the maggots may reach full growth, and drop off, in two days. It is just conceivable that if a sheep were lightly struck by one fly, and no secondary invasion took place, all the maggots might reach the dropping-off stage at the same time, and the wound would then heal, but this would be most exceptional.

Two types of fly are responsible for fly strike in New Zealand; one yellowish-brown and hairy, and the other bronze green. Other varieties of blowfly lay their eggs on dead matter—carcasses, etc.

Shearing of mature sheep and crutching of lambs are the two most useful means of prevention.

Certain damp or sheltered areas may be worse for strike than open country; also warm weather, with occasional showers, is worse than completely dry weather, even when very hot.

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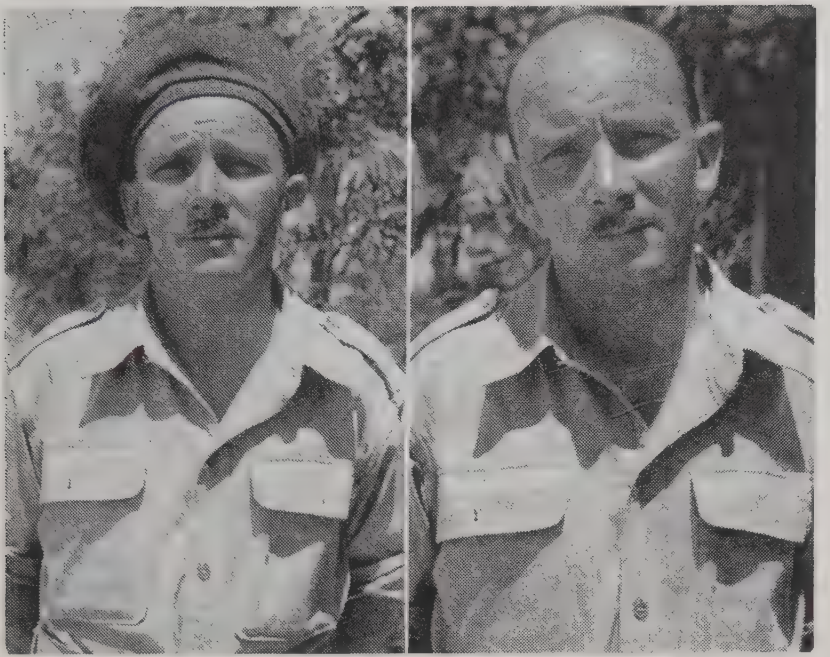


Do You Know This

UNIDENTIFIED SOLDIER?

ON May 9, 1943, a man believed to be a New Zealand soldier was found in a state of physical exhaustion and suffering from loss of memory wandering among United Kingdom troops in the Enfidaville area in Tunisia. He was wearing a field service cap with a New Zealand badge and a battledress blouse with New Zealand shoulder titles. He was admitted to a New Zealand Casualty Clearing Station and thence taken to Egypt in a hospital ship and admitted to 41 (British) General Hospital at el Kantara on May 16, 1943. Thereafter he received treatment at the Psychiatric Centre attached to 41 General Hospital and at No. 1 New Zealand General Hospital. In July, 1945, he was evacuated to the United Kingdom as a medical case suffering from loss of memory.

BECAUSE entries in a notebook in the soldier's possession indicated that he was interested in agriculture and dairying and apparently had read closely and commented on various articles in issues of the "Journal of Agriculture," the Police Department have requested the publication of the accompanying photographs and quotations from the notebook in the hope that they will give some reader of the "Journal" a clue to the soldier's identity. **Anyone having information which might help the police in their inquiries is urged to communicate with the nearest police station.**

When admitted to the Clearing Station, the Police Department's information continues, the soldier had in his possession a mutilated New Zealand Army paybook with several pages missing. The only readable portions of the paybook are as follows:

Married, single, or widower .. Single.
(a) Voluntary Enlistment .. Yes.
Next-of-kin: Name .. .. .. M....
Address .. .. Eller...

He also possessed a notebook containing many written entries, several of which were apparently made by a person interested in agriculture and cow farming, and who shared his interests in this connection with someone with whom he corresponded named "Johnny," probably of North Auckland. He appears to have closely read the "Journal of Agriculture" of May, 1942, and has entered extracts from it in a notebook with his comments thereon. The notes are not dated.

He comments on dairying and agricultural machinery advertised in the "Journal."

Apparently referring to C. Walker's article in the "Journal" of October, 1942, he writes—

> "Marine Flats on the Hauraki. For myself, I have seen good white clover growing there in spite of what Walker says and without the addition of topdressing. Though I agree, and have argued before, that certain areas do need a good topdressing. Sounds about right eg. 5 to 10 cwt of lime, to 2 to 2½ cwt of phosphatic manure, followed (in after years) by 3 cwt of lime to 2-2½ cwt of phosphate."

After giving a formula for feeding or rearing an orphan foal, he states—

> "Wastings from the cow shed should most certainly be used during wartime and after—they contain Potash = (30% potash Salts), Nitrogen = (Sul of Am), phosphate = (Superphosphate), Mag = (Mag Sulph), Lime = (Carbonate of lime). Shall write to Johnny and stress importance of same."

He then makes the following observations:—

> "Johnny says Wilkie's store at [Nth?] Auckland was blown open and £300 taken. Also McIlraiths; doesn't say how much."

He has the following notes on pig feeding:—

> "Pig feeding.
> Regularity of feeding 3 times a day and according to weight. I suppose Johnny is right feeding 5 times a day with whey.
>
> A 40 lb live W. pig req. 2 lb feed daily.
>
> A bacon weight pig eg. 200 lb about 7 lb. per day."

W. M. Wilkinson's store at Kaikohe was broken into on July 31, 1942, and McIlraith's store at Papakura was broken into on August 3, 1942.

Very wide Army and police enquiry has been made in the Middle East and in the Dominion, and with the publication of the photographs, which were taken recently, and these particulars with the following description of the soldier, it is hoped that information will be received whereby the identity of the soldier may be established.

Age probably 30-35 years; height 5ft. 2½in.; weight about 10 stone; stocky build; good physique; 37½in. chest measurement; dark hair going bald; blue-grey eyes; fresh complexion; clear-cut features; two scars on right thigh; partial upper denture with natural lower and front upper teeth. Speaks well with slight English accent.

MORE GRIP. LESS SLIP!

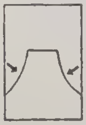
GREATER PULL

Tough, self-cleaning lug bars that are disconnected for easier penetration into soil — producing maximum pull, minimum slip.

EASIER RIDING

Properly angled evenly-spaced lug bars, over-lapping at centre, mean smooth rolling on highway without jolts, jerks.

STRENGTH



Lug bars buttressed at base like a dam for extra strength to stand alone, to bite deep and hard without danger of tearing off.

IMPARTIAL TESTS PROVE OPEN-CENTRE GOODYEARS DO UP TO 22% MORE WORK THAN CONNECTED BAR TREADS — SAVE FUEL AND TYRES!

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This explains why you accomplish *more work at lower cost* with o-p-e-n c-e-n-t-r-e Goodyear Sure-Grips. *Sure-Grip is the most powerful tractor tyre built.*

Up to 22% More Work

After exhaustive tests under varying conditions of soil and drawbar loads, unbiased investigators, using scientific testing equipment, discovered that Sure-Grips do up to 22% more work than tyres with connected bar treads. This is because Sure-Grip's self-cleaning lug bars are disconnected, stand alone. Thus, their sharp, leading edges penetrate the soil more readily, just as a fork penetrates more readily than a spade. And since the bars are tapered and stand alone, they bite deeper — have more ground to push against for maximum traction, minimum slip.

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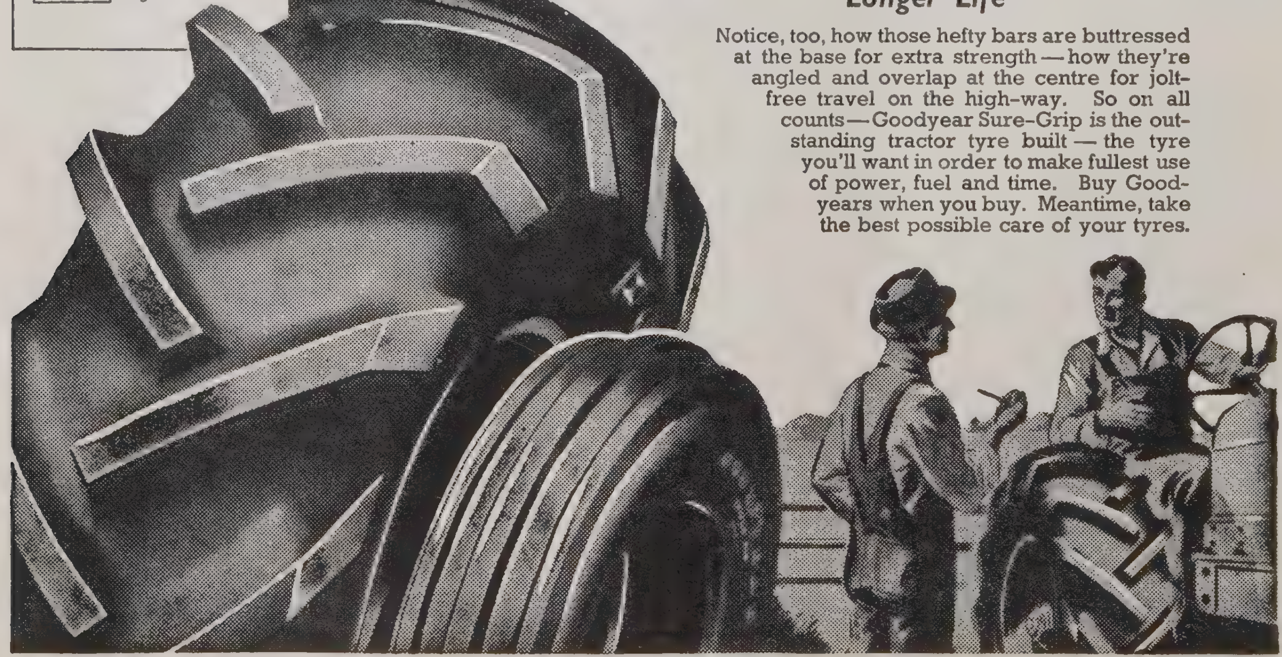
Notice, too, how those hefty bars are buttressed at the base for extra strength — how they're angled and overlap at the centre for jolt-free travel on the high-way. So on all counts — Goodyear Sure-Grip is the outstanding tractor tyre built — the tyre you'll want in order to make fullest use of power, fuel and time. Buy Goodyears when you buy. Meantime, take the best possible care of your tyres.



GOODYEAR

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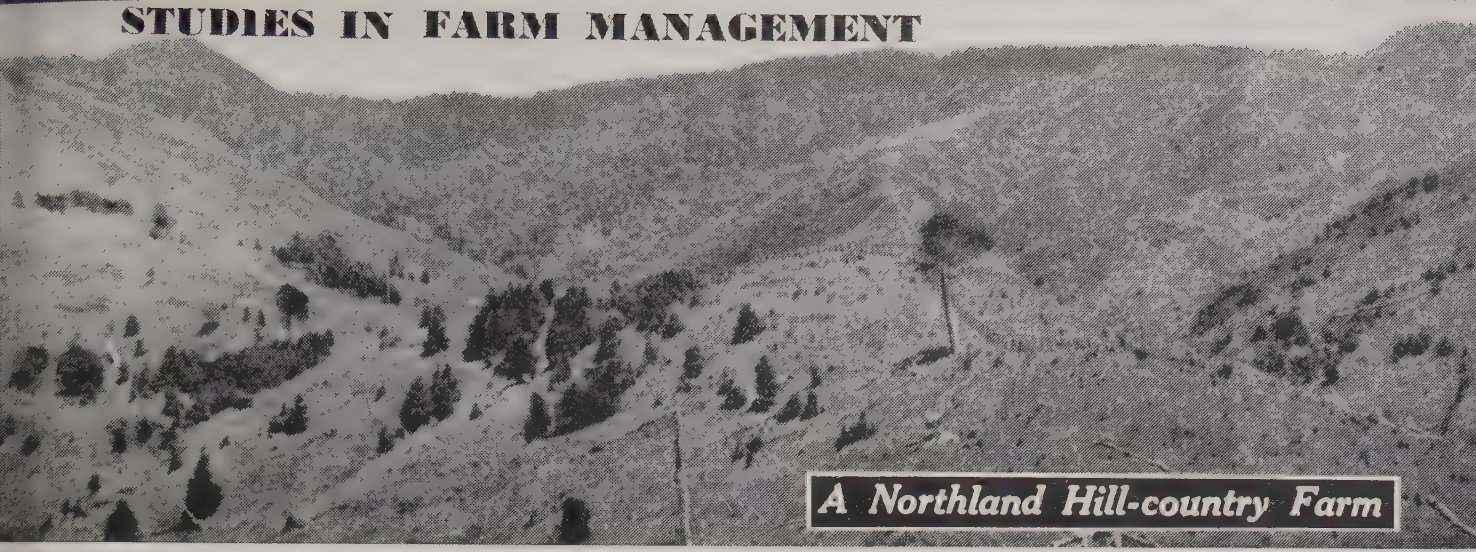
STUDIES IN FARM MANAGEMENT



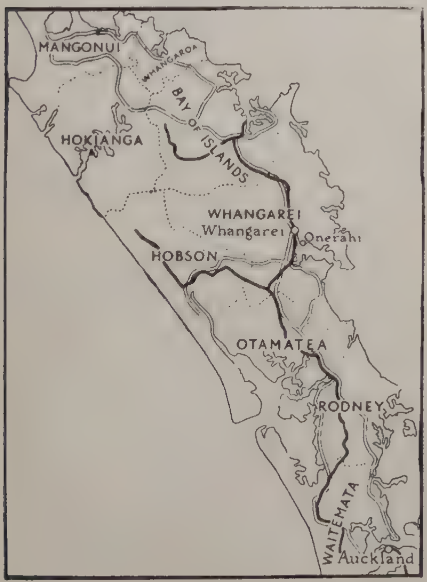
A Northland Hill-country Farm

ALTHOUGH dairying is the chief farming industry of North Auckland, the grazing of sheep and beef cattle, mainly on surface-sown hill country, is also important. This article describes the development of a hill-country farm of 2,002 acres in the Whangarei County and its present-day management.

By E. H. ARNOLD, *Instructor in Agriculture, Whangarei.*

TO that indented, elongated peninsula, extending over 200 miles north-west of Auckland City, came the Dominion's earliest settlers. The lands surrounding the Bay of Islands and the Hokianga Harbour were comparatively closely-settled districts when there were very few white men in Auckland, Wellington, Christchurch, or Dunedin. To the shores and banks of the numerous coastal indentations and waterways came ships to load New Zealand's earliest primary products—timber, flax, and kauri gum.

With increasing settlement and stocking-up of farms, produce such as wool, tallow, fat stock, and kegs of butter were shipped to Auckland whence the wool and tallow were exported. Introduction of refrigeration in the eighties brought about an increase of pastoral farming, particularly that specialised branch, dairy farming. Dairy farming today, confined largely to alluvial flats of river valleys and ploughed grassland of the easier and more gently-sloping hill country, is the chief farming industry. However, because of the increase in land settlement and the adoption of improved farming methods, pastoral farming—the grazing of sheep and beef cattle—mainly on surface-sown hill country, brings to the north an annual monetary return which is more than half the return received from dairying.



Topography

North Auckland, although extending over 200 miles from north to south, is in no part more than 60 miles wide. Numerous coastal indentations and waterways bounded by areas of alluvial and marine flats intersect the conglomeration of low hills and rolling country of sandstone, claystone, limestone, and volcanic formation. Scattered remnants of mountain ranges, composed mostly of basic volcanic and greywacke rocks, project here and there, while in the middle north there are basaltic lava flows with occasional steep-sided scoria cones. Along the west coast and north of Awanui there are extensive areas of consolidated sand. Most of the land is less than 500 or 600ft. above sea level; the two highest peaks, one near Tutamoe and the other west of Waima, are each 2,576ft. high. Few areas are above 1,000ft. The Soil Survey Division of the Department of Scientific and Industrial Research has subdivided the 5,200 square miles of peninsula surveyed into 500 square miles of flats, 2,100 square miles of easy and rolling country, 2,000 square miles of moderately steep hill country, and 600 square miles of steep hill country.

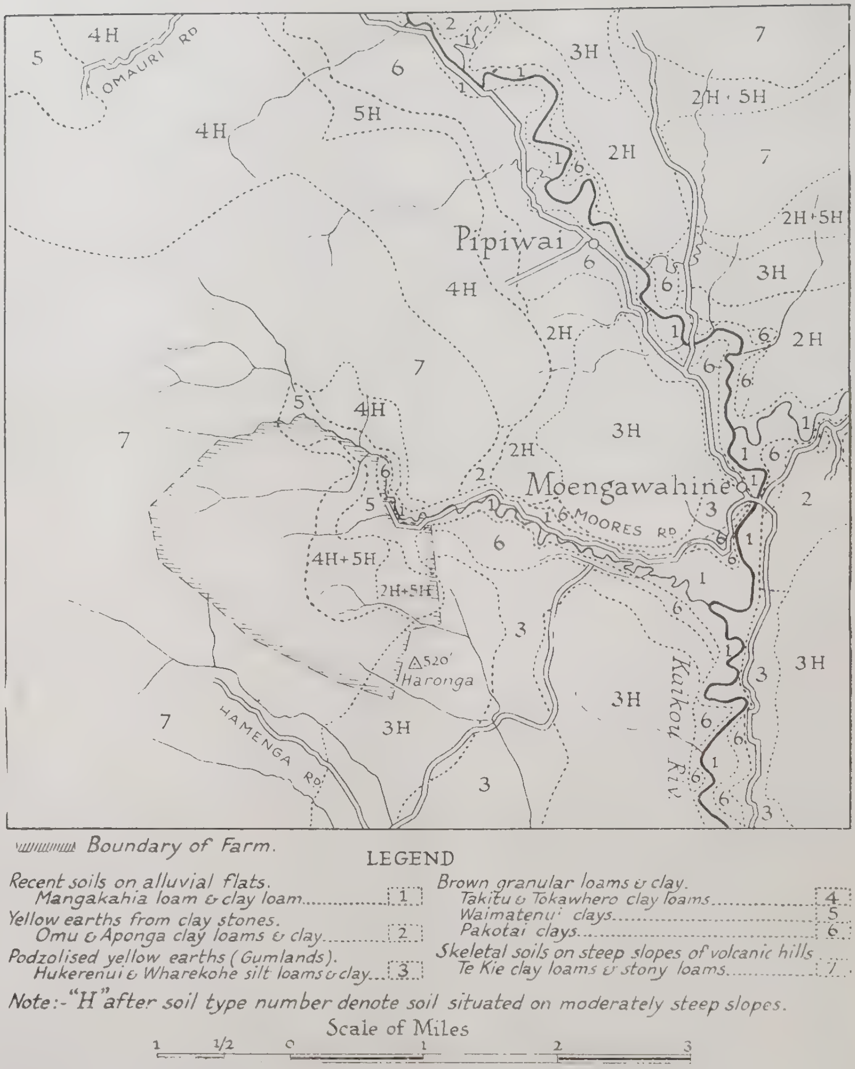
Soils

In the north there is pastoral farming on surface-sown bush and scrub "burn" areas too steep or insufficiently developed for profitable dairy farming. On very steep hill country where the soil is thin—confined mostly to the six northern counties—most of the bush-felled and grassed areas, which have rapidly deteriorated through soil erosion, have reverted to scrub, necessitating their abandonment.

It is, however, on the moderately steep hill country that pastoral farming finds a place in the economic utilisation of the northern lands. In the Mangonui and Hobson Counties small areas of soils on the recently-fixed sand dune country are used for sheep grazing; the soils, being light and free, dry out badly in the summer. Where pasture sward is poor with incomplete cover, wind erosion is severe. Limestone hills in the Bay of Islands County and calcareous sandstone hills—closely related in fertility—in both the Mangonui and Hokianga Counties are used for sheep and cattle grazing. Immature brown clays and clay loams, derived from mudstone, sandstone, and greywacke, cover 700 square miles, 400 of which are in the Whangarei County. The topsoil is moderately fertile, but this initial fertility is gradually being lost on hills poorly farmed. Reversion to scrub and fern is very noticeable, while there is frequent sheet and slip erosion in certain areas. A less fertile group of similarly-derived soils are the more leached grey-brown and grey clays. These, which orginally grew kauri and podocarp forests, were in scrub at the time of European settlement. On areas grassed and not improved by heavy dressing of fertilisers and lime, rapid reversion to scrub has resulted. Sheet and slip erosion are bad on many areas and the exposed subsoil is most difficult to regrass. More fertile are the brown granular clays derived from the basic rocks of the volcanic hills. While much of this area is used for grazing, some is still in forest. They are subject to sheet erosion and slip erosion to parent rock is evident in places. Under poor grazing management reversion to fern is common. Poor granular clays and volcanic soils low in topsoil fertility and easily eroded cover 100 square miles of hill country, mostly in the Mangonui County. Although attempts have been made to farm them, afforestation offers more economic utilisation.

Soils of the easy and rolling country are used for grazing sheep and cattle and for the production of fat lambs. Typical of these are the fertile limestone soils of the Otamatea and Hobson Counties and the more fertile brown, volcanic loams of the Whangarei and Bay of Islands Counties. Soils of the flats, both recent alluvial soils from the brown clay loams in narrow valley bottoms and meadow clays, are important in pastoral farming.

A surface-sown hill-country farm is at a disadvantage without a portion of easier country, particularly flats or ploughable undulating lands. These small areas provide hay and fattening paddocks. More important, however, are the extensive areas of meadow clay soils down to which store cattle are moved for fattening before sale.



Pipiwai
Moengawahine
OMAURI RD
MOORES RD
HAMENGA RD
Kaikou Riv
△520′ Haronga
1
2
3
4H
5
5H
6
7
2H
3H
2H+5H
4H+5H
Boundary of Farm.
LEGEND
Recent soils on alluvial flats.
Mangakahia loam & clay loam 1
Yellow earths from clay stones.
Omu & Aponga clay loams & clay 2
Podzolised yellow earths (Gumlands).
Hukerenui & Wharekohe silt loams & clay 3
Brown granular loams & clay.
Takitu & Tokawhero clay loams 4
Waimatenui clays 5
Pakotai clays 6
Skeletal soils on steep slopes of volcanic hills
Te Kie clay loams & stony loams 7
Note:-"H" after soil type number denote soil situated on moderately steep slopes.
Scale of Miles
1
1/2
0
1
2
3

Climate and Vegetation

In the warm and temperate climate with prevailing winds from the west and a rainfall ranging from 40in. to 70in. annually, a land covering of heavy forest was first produced. Later, on certain areas where the soil fertility had been lowered by prolonged soil leaching, and more recently on areas where the bush covering has been destroyed by extensive forest fires, manuka and fern replaced the primeval forest association. Although more than 2,500,000 acres are in occupation, only a little more than half this is in permanent pasture, consisting mainly of surface-sown grasslands.

Hill Pastures

Bush hill country in the north was first developed by the cutting out of millable timber—exploitation rather than development. Settlers felled the remaining bush and, after a suitable period of drying out, set fire to the countryside. On the ashes of the burn, grass seed—predominantly mixtures containing English species—were sown. Fertility, however, gradually fell, the better species did not persist, and the resultant pastures comprised danthonia on the poorer and drier faces and browntop on the better and slightly moister soils. Stocking decreased, and on many runs the proportion of cattle to sheep was insufficient to control the fern and secondary growth. Reversion to bracken fern and manuka eventuated. To dispose of the fern and scrub and to take off undesirable rank growth of danthonia, hill farmers resorted to summer burning. This easy practice controlled to some extent the scrub and, with adequate rains following, permitted fresh green growth of thickened danthonia to come away.

Burning converts hill pastures into pure danthonia swards; pure danthonia swards must be fired each summer; summer burning often results in bare ground being exposed when copious autumn rains fall. Bare ground aids sheet erosion; the desirable fertile topsoil is washed away.

On many hill areas over the past decade or two, paspalum has been introduced. Although its growth here is less vigorous than on the rich river flats or topdressed rolling country, it persists indefinitely on hill land, producing a close, tight sward of low feed production. Equally successful pasture swards on easy country can be established and maintained only by adequate topdressing and controlled grazing; this is also the case on hill surface-sown pastures.

Absence of clovers, especially white clover, *Lotus major*, and subterranean clover, is particularly noticeable on hill pastures. Before substantial improvement in danthonia, browntop, and paspalum hill pastures can be expected, topdressing must be accompanied by sowing seed of clover plants. Clover seed, which cannot be sown directly into a tight sward, is best scattered on bare knolls, stock tracks, and wherever the soil is loose. From these infiltration points, new seed is carried out into the pasture through stock droppings.

Ample clover is essential to maintain ryegrass, cocksfoot, and crested dogstail in the hill sward. Adequate legumes turn sod-bound matted paspalum into an excellent hill-country grass.

Paspalum assists substantially in controlling secondary growth, for it does well and persists even under the shade of tall fern and scrub, recovering after burning.

Before the war only a very small proportion of hill country was topdressed. Apart from on a few farms, this topdressing was practised only when prices for wool and store and fat stock were good. North Auckland hill lands all require phosphates and nearly all demand heavy applications of lime. The cost of transport and application, which includes use of pack horses and hand distribution, made uneconomical the application of necessary phosphates and lime. Increased production is possible even if only light and regular dressings are applied. Rotational treatment of the hill pastures by which each area receives an application over three or four years is indicated. A high-grade phosphate, slow in action, is necessary over this period. Ground rock phosphates and basic slag, popular where used, are difficult to apply. There is scope for the development of a suitable phosphate in, perhaps, a granular form. Some hill farmers have reduced the cost of application by forming roadways of easy grade up which motor-lorries cart fertilisers and lime to strategic points, whence the fertiliser is distributed from the ridges down the slopes and hillsides. Today, with the aid of a bulldozer or the angle-blade on a crawler tractor, many areas of hill country are being roaded.

If better pasture plants, especially the clovers, are introduced into hill pastures the periodical use of the firestick must be abandoned. The next burn of scrub in preparation for resowing grass seed must be the last. As young and hungry cattle are necessary to clean up rank danthonia and to crush out bracken fern the proportion of cattle to sheep, now about one cattle beast to eight or ten sheep, must be narrowed.

Progressive hill farmers have already found that by increasing the number of cattle in relation to sheep there has been better use of pastures and greater control of fern.

Better pastures on hill country require in proportion more cattle and less sheep than at present. The limiting factor common to most North Auckland surface-sown hill farms is the low winter carrying capacity of cattle. Special provision of supplementary feed is the exception rather than the rule. An infinitesimal amount of cropping is done. Only a few hill-country men make hay on their easier country for feeding out on the hills. As these men carry more cattle the feeding out of hay—baled and carted up the formed roadways during the summer months—from the ridges is a means of improving pastures through increased fertility from stock and dispersal of seeds of the better pasture plants. The planting of special areas of pampas grass for wintering run cattle is getting increasing attention.

Soil Erosion

Unfortunately, most hill-country pastures are not increasing in productivity. It is estimated that during the past 10 to 12 years the stock sold from off North Auckland hill country has decreased by 15 per cent. Each year production is lessened by considerable areas reverting to fern and scrub and by many thousands of acres being lowered in fertility through soil erosion. Soil erosion is not so spectacular in the north as it is in some other parts of the Dominion. However, it is serious. Annually, the insidious actions of sheet erosion mean thousands of tons of surface soil washed down to the sea as silt. Where the original binding of forest trees is lost through ultimate decay of their roots, and the lower fertility of the soil results in an opening up of the sward, slip erosion has started to denude considerable areas of steep hill country.

Stock Position

The sheep grazed in North Auckland are, with few exceptions, Romneys. Where, on the easier country, fat lambs are raised, Southdown rams are used. Cattle of the three main beef breeds are well represented. Herefords provide the greatest number, and they are closely followed by the Aberdeen Angus. Shorthorns, once predominant, now represent only a small percentage of the beef cattle. On some smaller grazing runs there are many Jersey cross steers which are scarcely profitable. The marketable products are wool, lamb, mutton, beef, and store stock. Apart from the introduction of pure-bred breeding stock, the north is self-supporting in both sheep and cattle. Small numbers of surplus breeding ewes are sent to South Auckland and the Waikato. Larger numbers of store cattle are forwarded to the same areas for fattening.

WHANGAREI COUNTY
Land Areas, Crops, Pastures, and Livestock, 1943-44.

	Acres
Area occupied	**526,823**
Area in pasture	**326,631**
Pasture cut for hay and silage ..	**10,317**
Annual crops, root and fodder	**1,306**
	Numbers
Cattle, Total	**132,898**
Dairy cows in milk	**56,940**
Beef breeds (estimate)	**53,000**
Sheep shorn	**152,696**
Number of holdings, Total	**1,930**
With cows in milk	**1,543**
Carrying sheep	**317**

That most of the steeper hill country should be abandoned from the pasture aspect and used for growing timber trees is often advocated. However, from this land comes the store stock—the old ewes for raising fat lambs, and the surplus sheep and cattle—for the fatteners. To abandon it would upset the balance between the grazing runs and the fattening farms. Retreat from the very steep, easily slip-erodable farms which, in any case, are unsuitable for growing grass is certainly wise. The answer to erosion on the moderately steep country is not wholesale abandonment but better hill-country farming and a reorientation between grazing and

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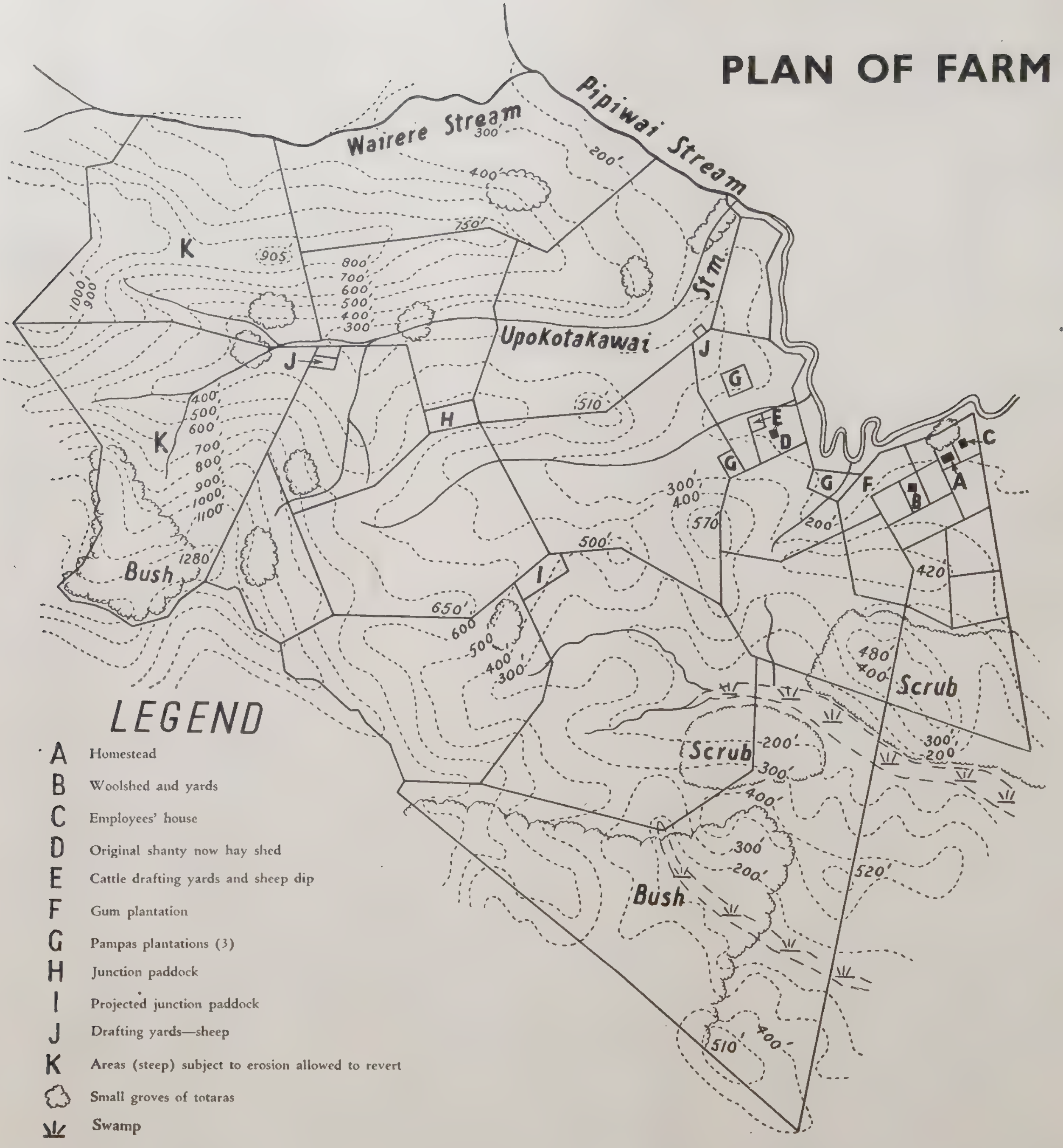
Wairere Stream
Pipiwai Stream
Upokotakawai
Stm.
K
K
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I
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C
A
B
F
Bush
Bush
Scrub
Scrub
300'
200'
400'
750'
905
800'
700'
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300'
480'
400'
200'
300'
200
300'
400'
300'
200'
520'
510'
400'
LEGEND
A Homestead
B Woolshed and yards
C Employees' house
D Original shanty now hay shed
E Cattle drafting yards and sheep dip
F Gum plantation
G Pampas plantations (3)
H Junction paddock
I Projected junction paddock
J Drafting yards—sheep
K Areas (steep) subject to erosion allowed to revert
Small groves of totaras
Swamp

PLAN OF FARM

farm forestry. Farm forestry on surface-sown hill country will require the planting of the very steep faces, a practice which includes fencing and the distributed planting of such trees as totara and poplar over a hillside where the roots will replace those of the original forest trees now decayed.

Individual slips will require treatment by planting binding grasses such as kikuyu grass, and suitable trees or shrubs.

Better farming, which means more efficient pasture management, includes more adequate subdivision, topdressing with fertilisers and lime, introduction of better pasture species (especially the clovers and *Lotus major*), and an increase in the cattle population which can be brought about only by the provision of more winter feed.

Improvements in hill-country farm management have been neglected through lack of finance. Many grazing runs are rather small for economical working and frequently the small grazier possesses insufficient capital to make any headway. The recent war years, with their shortages of labour, fertiliser, and farm supplies, aggravated the decline in the carrying capacity of northern hill farms.

A NORTHLAND SURFACE-SOWN HILL-COUNTRY FARM.

Although soil and topography cause variation in farm practices, the study of the farm owned by Mr. A. Briscoe Moore at Moengawahine, Pipiwai, 25 miles from Whangarei, provide not only knowledge of the methods adopted on a typical surface-sown hill-country farm in Northland, but, from the careful records compiled, also gives a valuable account of planned development over 25 years. Moreover, it reveals the difficulties experienced by the modern pioneer in making a farm out of bush, and records the practices evolved to overcome them. Mr. Briscoe Moore, after graduating from Lincoln Agricultural College in 1910, gained experience shepherding in the high country of Waitaki. Later, he took up a small grazing run at Otekaike. After serving overseas, he returned to New Zealand in 1919, and along with many other returned soldiers who settled in the north at that time, he took possession of his present farm.

Early History

The property of about 1,900 acres was taken over in 1920. Many years before, all the big kauri timber had been cut out, and during the first 15 years other millable timber, mostly rimu, matai, and white pine, was worked over. A total of 420 acres were in grass, sown in English pasture mixtures at intervals during the previous 10 years. Some 360 acres of new bush choppings had just been burnt; the remainder comprised unimproved bush areas, carrying a mixture of kohe kohe, totara, rimu, matai, and white pine. Five miles of fencing, together with log stock yards and a bush shanty, were the only improvements. The stocking at that time was 340 dry sheep. The nearest metalled road was eight miles away, and a clay road from this reached to within three miles of the property. For the first three years all supplies were brought in by pack horses. This involved the fording of the Hikurangi river.

In Mr. Briscoe Moore's own words, "The general policy for development of the property has been to use the resources available in labour and capital for productive development which would increase the carrying capacity of the property and, consequently, the revenue to be derived from it. All the early work was directed towards clearing new areas of bush-land and grassing them. These were enclosed with fences for proper control with stock."

The owner was content to bach and live simply. In these early years, the ability to use a camp oven in an open bush fire-place was essential. This art was successfully acquired by the settler. After the first five years, when income increased considerably, a permanent homestead with more amenities was built. New settlers on bush areas in the north often saved considerable expense in obtaining house timber by felling suitable kauri and totara trees growing on the property. After these were cut into suitable sizes, a bullock team was hired to transport the logs to the road and mill, and then return the sawn timber to the homestead site. After the first three years, during which all materials were packed in, a road was eventually formed and later metalled. In the early period, the shearing of sheep and the forwarding of wool presented difficulties. These were overcome by driving all dry sheep out nine miles to be shorn, and by shearing the wet ewes with blades in the open—work involving many difficulties in the changeable climate. During development, while contract labour was employed in gangs for bush felling and some of the fencing, all other work such as sowing, additional fencing, road making, building construction, scrub cutting, tree planting, and draining was done by the employer and two or three permanent hands.

Planned Development

A factor contributing to the easily workable and effective layout of the present farm was the working-out in advance of the general plan of development. New work each year was designed to fit into the picture visualised. For instance, each succeeding bush area cleared was planned to make as much use as possible of the fencing erected to enclose the last area brought in. Although the initial plan has been followed closely, adjustments, necessary in the light of experience gained, have been made.

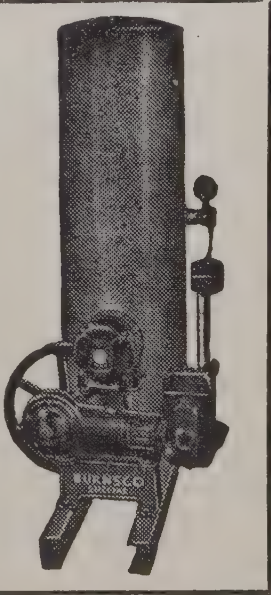
In planning sub-divisional fences, sheep and cattle yards, and the woolshed, particular attention was given to ensuring a layout which would result in the easiest working of stock with the minimum of labour.

For example, gates in sub-divisional fences were placed at points where stock naturally muster; sheep yards were sited on well-drained ground so that sheep, while being drafted, ran towards the hills from which they had come. At the woolshed, wide entrance doors and weighted drop gates contribute to easy working.

Topography and Soils

In topography, the property ranges from 200ft. to 1,280ft. above sea level, consisting for the most part of moderately steep to steep hillsides. At the front, comprising less than one-tenth of the farm, there is easier country, ranging from 200ft. to 400ft., the soil of which consists of areas of gumland silt loam and an area of alluvium from the hills. These areas, which are later briefly referred to as the "gumland" section, are typical gumlands of the better type, originally in scrub; with good treatment they will maintain a pasture of high carrying capacity. These soils require and respond well to heavy lime and phosphate topdressings. The homestead block is situated on this area.

The remainder of the property, later briefly referred to as the "bush" or "hill" section, consists of moderately steep to steep hillsides, the soil of which comprises brown granular loams and clays derived from doleritic rock. Over two-thirds of this area consist of the Te Kie stony loam. This soil type, recently formed from the parent rock, is fairly fertile, but a small portion known as the red brown phase is deficient in lime. At the back of the property, reaching to the crests of the ridges, the land is steep and best



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Left—Packing out grass seed. Right—Topdressing bush-burn pasture.

left in bush as, once cleared, soil erosion becomes serious.

The less steep slopes have been grassed and, although subject to sheet and slip erosion, will, with careful stocking, adequate topdressing, and spot planting of totara trees, hold a pasture.

To the front of the previously-described soil type is an area of less steep country of easier slopes, the soil of which consists of areas of Takitu clay and stony clay and Waimatenui clay. Waimatenui clay soil, covering most of this easier country, is more mature and deficient in lime. To the south-west of the homestead block and between the gumland area and other hill soils, is an area of clay and bouldery clay soil known as the Kaimaro complex. This area is moderately steep, but of low fertility.

Developing and Grassing

The Bush Areas.—Chopping of the bush area selected for development each year started in May and was completed about October. A minimum of three months was needed for drying; the cut-over area was burnt in late February or early March with the object of sowing the seed soon after the middle of March. At first, the practice was to sow a predominantly English grass and clover mixture, but experience soon showed the advisability of including a considerable proportion of paspalum, *Lotus major*, and certain grasses demanding lower fertility to take the place of ryegrass when the initial high fertility (due to the ash of the burn) declined. The seed mixture finally evolved for surface-sowing hill burns was:—

	lb.
Perennial ryegrass ..	10
Paspalum	6
Crested dogstail ..	3
Danthonia pilosa ..	2
Browntop	2
White clover	1
Lotus major	1
Total	25lb. per acre.

A feature of the work done to ensure successful maintenance and improvement of the hill pastures has been the building of some roading to give truck access for topdressing with phosphate fertiliser. Of necessity these roads are made easy in grade to prevent water damage by erosion. The practice has been to sow a pasture mixture, topdress heavily all roads soon after formation, and obtain a strong pasture covering to avoid the flow of fast-running water.

The Gumland Area.—Five years after the property was taken up, an adjoining section of easy gumland was acquired for a homestead site and frontage. This area of just over 100 acres, totally unimproved, carried a heavy growth of manuka, fern, and blackberry. Most of the area was seriously waterlogged and full of gum holes—a legacy from the gum-digging days. The scrub, which was cut during the winter, lay for nearly 12 months and was then burnt. This also cleaned up most of the manuka

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stumps. Subsequently, the larger stumps, cabbage trees, and the remnants of earlier manawa and kauri forest were grubbed out. Before ploughing, the gum holes were roughly filled in. The land was ploughed in early winter (May-June) with a single-furrow plough. The ploughed area was allowed to lie fallow until the late spring, when it was worked up with the discs until it was well broken down. In the early summer, a second ploughing was given, followed by further surface cultivation until a good, compacted surface with a nice fine tilth was obtained. One ton of lime per acre was applied; the land was sown down late in February. At the time of sowing 3cwt. of phosphate fertiliser was applied. The mixture was as follows:—

	lb.
Certified perennial ryegrass	20
Certified cocksfoot ..	6
Paspalum	6
Crested dogstail ..	3
Montgomery red clover	3
Certified white clover	2
Lotus major	1
Total	41lb. per acre.

A most effective method was adopted to get a firm seed-bed, to cover the seed, and to ensure rapid and even germination of the seed. This was the thorough tramping of the area by a large mob of sheep driven round and round for almost a day. Subsequent work on these areas consisted of placing manuka fascine drains where necessary and building up fertility by fertilisers and lime. Successive areas were tackled each year, until some 60 acres in paddocks, averaging approximately 7 acres each, were established in pasture.

Recent developments have included the application of lime and fertiliser from a box distributor on the back of a motor truck.

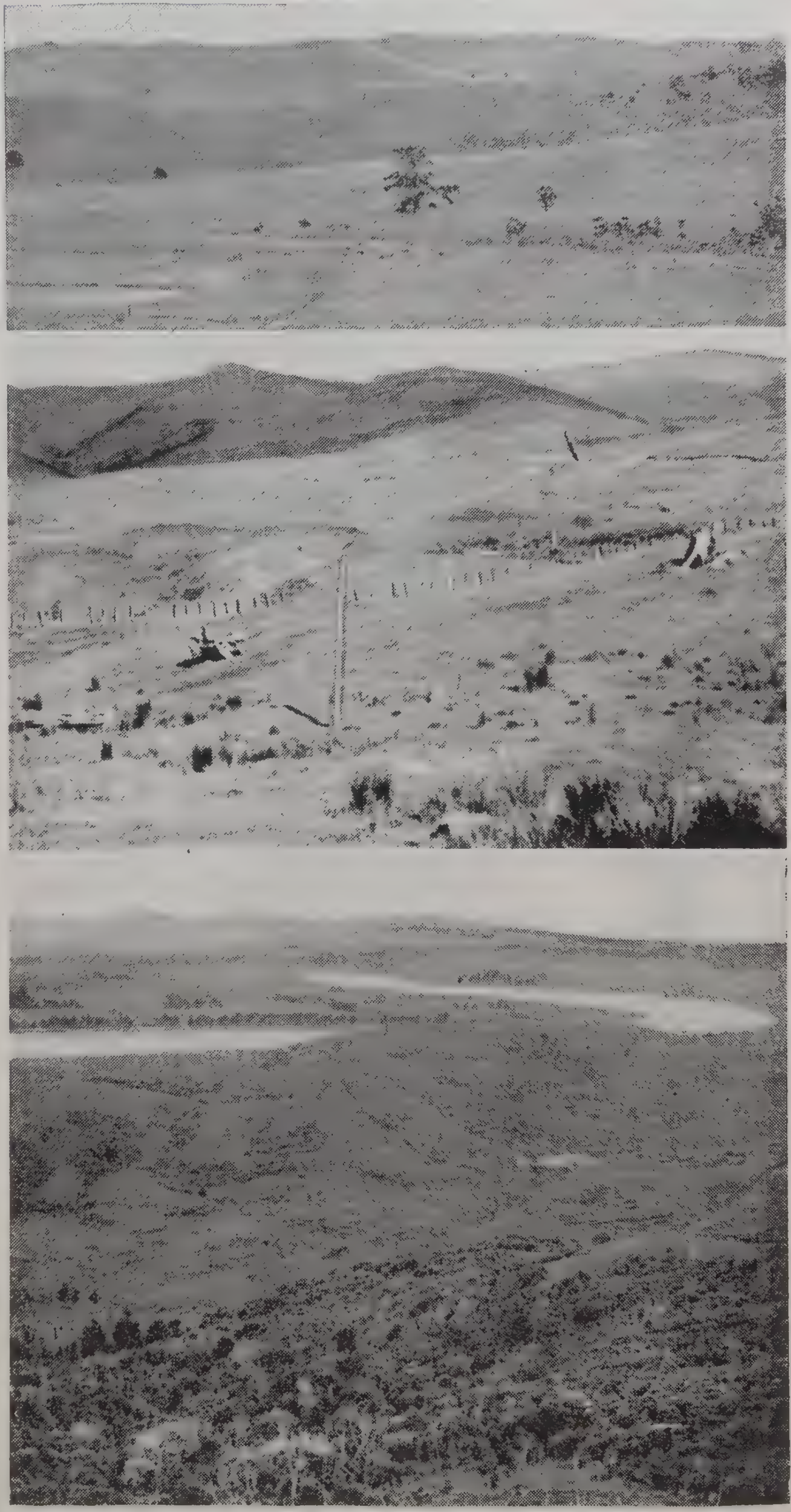
A good pasture of high carrying capacity which stands up particularly well under dry conditions has been developed.

The Farm and Equipment

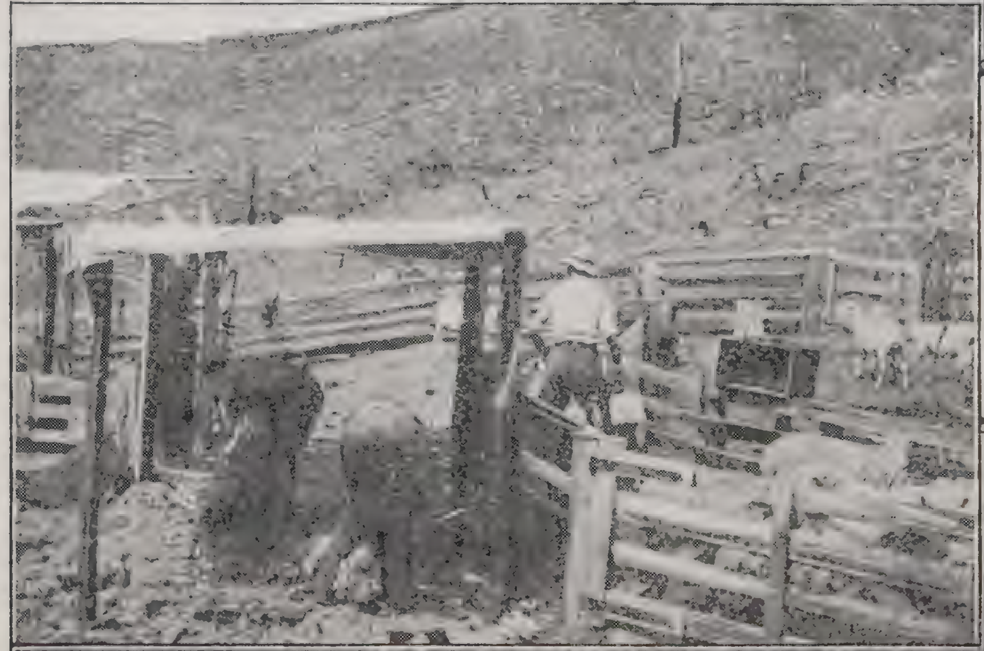
Today, of the total property comprising 2,002 acres, 1,460 acres are grazed, 160 acres of which are subject to soil erosion and reversion. Of the 1,300 acres of cleared grassland, all but 60 acres is surface-sown hill country. This hill country is in blocks ranging from 25 acres to 150 acres. The ploughed and grassed gumland forming the homestead block is in paddocks ranging from two to eight and three-quarter acres in area.

The three-stand woolshed is handily situated. It is of two storeys, carefully designed, very compact, with ample room but no waste space. Dry-

NORTH AUCKLAND SURFACE-SOWN HILL COUNTRY



Upper—On limestone country. Middle—On sandstone country. Lower—Clay hills reverting to scrub.



CATTLE AND SHEEP

Upper—The drafting yards today.

At left—The woolshed in 1920.

Below—The woolshed today.

ing pens with a capacity of 300 woolly sheep are provided. The homestead yards at the woolshed are capable of working 1,500 sheep. Drafting gates are arranged to draft into four lots. A concrete footrot race runs parallel to the drafting race, while one of the counting-out pens is concreted and covered as a foot bath for treating sheep before they go over the board. The sheep dip, of the tip-platform type, is oval (with no corners) and holds seven sheep at a time. Permanent, small rail yards have been erected in every lambing block. Centrally situated about half-a-mile from the homestead are the main cattle-drafting yards. Two other sets of yards are located at outpoints, and at the meeting of five blocks there is a junction paddock. Further junction paddocks are contemplated. All yards are located and designed to allow easy working of stock. Other buildings comprise an implement shed with timber loft above, a cow-shed, a hay barn to hold 300 to 400 bales, a workshop and garage, and accommodation necessary for shearers. In addition, an up-to-date house for employees has recently been built.

Water Supply

The homestead area is located on the gumland section of the farm. Gumland, generally, is not well watered. Mr. Briscoe Moore has adopted a unique scheme which he noted in Palestine during the 1914-18 war. Rain water is led off the slopes by shallow furrows and drains through silt traps into concrete cisterns which are completely covered over. From these cisterns (sufficient in number and large enough to provide for the longest dry spell) where it is kept fresh and pure, the water is piped to the drinking troughs. The rest of the farm is watered by shingle-bottomed, running streams.

Shelter

Provision and maintenance of shelter have not been overlooked. In fact, the shelter belts and plantations on the homestead block provide not only valuable protection and future timber supplies, but also set off buildings and yards in a most attractive manner. Rows and clumps of Eucalyptus, mostly *E. saligna*, and pines have been extensively planted. Adjacent to the homestead there is an area of natural, regenerated native bush. Immediately west of this is a valuable plantation of 14 acres containing 10,000 trees of *Eucalyptus saligna*. Seedling totara, which grow readily on hill country, are encouraged, particularly on the steep hillsides, where they are developed into groves. They require no protection from stock, provide shade for stock, help to prevent soil erosion, and provide a long-term timber crop. Mr. Briscoe Moore places particular value on the totara for hill country and, when labour is again available, he will put into effect a plan to raise 2,000 totaras each year for planting out on the hill areas.

PASTURE MAINTENANCE

Topdressing

The method followed on this farm has been to topdress the front and easily-accessible areas of about 90 acres regularly, and to try to establish a four-year cycle in the topdressing of some 800 acres of the easier hill country by treating 200 acres each year as a maintenance measure. For the latter, fertiliser has been carted by truck over the roads formed on to or close to the block to be topdressed. From this point it has been carried by a sledge or a team of pack horses to the ground. The actual distribution has been made by hand, usually on contract.

On the front 90 acres before rationing the annual dressing was 2cwt. to 3cwt. per acre of finely-ground Tunisian phosphate or Seychelles guano applied with a lorry-borne topdresser. Fairly heavy dressings of lime have been applied at regular intervals. With rationing of fertiliser, increased attention has been given to the application of heavier dressings of lime.

> **Liming has proved of value; experience proves that this practice must not be dropped or even reduced when adequate fertilisers are again available.**

Previously on the hill country. 2cwt. per acre of high-grade phosphate was applied every fourth year, and this application proved effective in maintaining if not improving the carrying capacity and standard of the pasture. The object is to keep a proportion of leguminous plants, especially *Lotus major*, in the hill pastures. Economic and physical difficulties in applying phosphate to hill country necessitate the use of a high-grade and long-acting fertiliser. The type used not only met these requirements, but also suited the hill soils on this property. As with hill country generally at the present time, the lack of supplies, the shortage of labour, and the high cost of transport severely handicap the maintenance of pasture on this property.

Grazing Management

On this property, it has been shown that a close relationship exists between the maintenance of pasture in the best condition and the use of stock, particularly from the aspect of the proportion of sheep to cattle. Good-constitutioned run cattle, properly used, are capable of keeping in check any fern-developing tendencies. Too heavy stocking with sheep and too hard grazing by sheep lead ultimately to the opening up of the pasture, elimination of the better species, and an invasion of weeds, in particular the growth of hard fern. This experience proves that lightening-up the stocking of sheep and increasing the proportion of cattle to sheep are desirable and should be more widely practised. In the past, one cattle beast to seven or eight sheep has been general practice. On the farm under review, it has been shown that a substantially higher proportion of cattle is required for the best maintenance of pasture on hill country; a proportion of one to five or one to five-and-a-half is considered necessary. In controlling roughage, maximum use has been made of cattle and minimum of fire.

Incidence of Soil Erosion

As on many similar properties. fairly serious soil erosion is evident on the steeper and lighter land at the back of the property. The owner realises that some 200 acres of this country would have been better left in bush and that now the correct procedure is to attempt to meet the problem by encouraging natural regeneration of scrub and bush where possible and of holding slip-scarred pastures by binding grasses and by the encouragement of tree growth. particularly of totara. Totara seed germinates readily in the clearings and as the seedlings grow without protection from stock they have been preserved and encouraged in such

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situations. The owner believes that much more can be done by growing and planting totara trees. From his experience, he has tentatively concluded that on areas such as this hill run, the ultimate solution may lie in a combination of stock grazing on the easier faces and farm forestry on the steeper or more easily erodable areas. Experimental planting of kikuyu as a binding grass on slips promises good results.

Supplementary Feed

The factor limiting the cattle-carrying capacity of surface-sown hill country runs is the period of feed shortage likely each year between July and September. On this property, the shortage is countered by closing a small area for hay each year. From the four acres, two cuts are obtained each season. In addition, three pampas-grass plantations totalling four acres have been established. These are enclosed areas of drained swampland with access in each case to a run-off. This practice of utilising small areas (of little use for anything else) for providing valuable winter feed could profitably be widely extended.

Stocking and Production

The sheep kept are Romney and a breeding flock of 1,200 ewes is maintained. Last year, 922 lambs were marked, this being about the average lambing, which runs from 76 to 78 per cent. Four hundred ewe hoggets are held for replenishing the flock, while 70 wether hoggets are retained. Thirty-six Romney rams are carried, six being replaced annually. During the 1943-44 season, 43 bales containing 16,603lb. of wool, of an average 48's count, were produced. At the annual lamb fair in February, 330 store shorn wether lambs were sold to fatteners, while 55 cull ewe lambs and 60 cull wether lambs went to dairy farmers. At the subsequent annual sheep fair 70 wethers were disposed of to fatteners, and 50 cast two-tooth ewes to local sheep farmers. Cast five-year-old ewes are at this time sold to Waikato fat-lamb producers.

Hereford cattle are run. This breed is preferred as they do well and good calving percentages, never less than 90 per cent., are obtained. The breeding herd consists of 120 cows, while young stock kept comprise 66 rising two-year-olds and 70 weaners, all mixed sexes. Five purebred Hereford bulls are used, one or two being replaced each season as required. In September, 30 two-year-old steers are sold to graziers and 20 two-year-old heifers to local breeders. In March, 40 six-month-old fat calves are forwarded as vealers to the Westfield stock markets, while in April ten to twelve aged cows are disposed of either as fats or store or in calf.

WOOL

Upper and middle—Loading out wool in 1922 and 1942 respectively. Lower—Ewes and lambs from the woolshed.

Other stock kept on the farm consist of a team of three horses, active half-draught types, which are invaluable for sledge work, for harrowing, and as pack horses packing loads of about 300lb. There are also five riding hacks and two house cows.

Seasonal Management (Sheep)

At weaning time, which occurs immediately after the New Year, all ewes and lambs from the various blocks are mustered into two main flocks and taken successively to the homestead yards where the lambs are drafted off into sexes. The ewes are put away in one big mob in a handy block, and lamb shearing, which usually takes three days, proceeds. On completion, the surplus lambs are drafted up for sale; the ewe lambs are carefully culled. The sale lambs are held in the homestead paddocks for a week or more, when they are driven into Kamo for sale.

About 470 lambs are retained, dosed with nicotine-bluestone drench, and put on to a good block of country on which the feed has been previously shortened up with cattle. These lambs are shifted every 21 days, always on to short, clean pasture ahead of the ewes. At each shift until June, when they acquire immunity, they are drenched as described. During this period, lambs showing signs of unthriftiness are taken out and held by themselves over the winter on top-dressed pasture at the homestead.

The practice is to graze the lambs on the pick of the feed until the late autumn, when they are moved out to the higher and steeper blocks at the back of the property where they are rotationally grazed until shearing time.

Immediately after lamb shearing and the disposal of the lambs, the two-tooth ewes and wethers are brought in, the wethers being placed with the sale lambs. The two-tooth ewes are carefully gone over. This results in about 50 being culled and sold because of minor defects in constitution, in conformation, and in wool.

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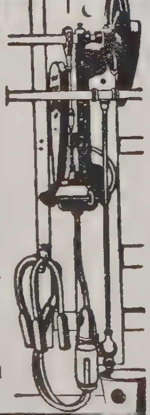

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Afterwards, all other ewes are mustered in and the annual draft of cast ewes is culled out on the age marks. All five-year-old ewes and a proportion of younger ewes that show any defects are placed aside on good feed to freshen up. These are sold to Waikato buyers at the end of January. After the drafting-up of sale sheep, dipping is done with a standard powder dip. The sheep are brought in and held overnight in small paddocks adjacent to the dip; care is taken not to drive them any distance after dipping. There are no losses from dipping. From dipping to tupping time, the ewes are handled in two large mobs according to their condition. The object is to freshen up the lighter-conditioned ewes and to do the well-conditioned ewes fairly hard to avoid over-fatness. The rams are put out about February 20, starting with about 50 per cent. Ewes with rams are rotated in two mobs on the best feed available. The ewes are ring crutched at the beginning of March; the rams are taken away on May 10 and placed on freshening feed. Before crutching, which starts in the first week of June, the feet are examined and, where required, are clipped and given other necessary attention.

Rotational grazing of the ewes continues till July 20, when they are all mustered. The early-lambing ewes, usually about 450, are taken out by individual examination of each sheep and placed in their respective lambing blocks. The main flock is subsequently yarded every two or three weeks until all ewes in lamb have been drafted out and assigned to lambing blocks of from 80 to 150 acres. These are stocked according to their carrying capacity. The empty ewes are placed on a back area. During lambing time, the ordinary practice of daily shepherding is carried out; everything possible is done to minimise losses. Lambs are docked as soon as lambing is successively completed in each block. Small pens are built in each block and a roll of sheep netting is used for wing fencing. The method used, which entails the use of a heavy searing iron heated in a brazier for tailing, and a patent castrator, is bloodless. This method induces very quick mothering-up, mismothering being negligible. The risk of mismothering means that little movement of ewes and lambs is possible up to shearing time, but after shearing they are moved to fresh feed as opportunity offers.

Shearing, which has to be done fairly early to avoid bidi bidi, usually starts about October 20. The ewes with lambs are handled in mobs as small as practicable to ensure that they are shorn and turned out again quickly. Sheep showing defective fleeces are marked in the wool and, when shorn, receive cull brands. Each lot of lambs is put through the shed and crutched to prevent fly strike, the incidence of which in this way is substantially reduced. After shearing, all sheep are carefully watched—particularly in humid periods—for fly strike, the materials for treatment being carried on the saddle. Normally, the most effective dressing is made up by dissolving (by heating) 3lb. boracic acid in one gallon of glycerine.

Seasonal Management (Cattle)

The weaning of calves takes place at the end of March or early in April. First two lots of 20 each are sent as vealers to Westfield. The remaining calves are weaned towards mid-April. In this way they are established on their own while the feed is still good, and the cows are given a chance to put on condition before winter starts. The method of weaning is to bring in the cows and calves in two separate lots for ease of handling and draft the calves off in the race at the cattle yards. With small calves considered too young to wean, usually up to six in number, the mothers are left. For ease of handling, the weaned calves are divided into two lots and driven out to a block on which the feed has been saved for them. The cows are then turned out into an adjoining block divided from the calves' block by only a short length of first-class fencing. After about a week both cows and calves drift away from the fence. The cows are then mustered, divided into two working mobs, and used for cleaning up autumn roughage. They are moved round the various blocks until the feed starts to shorten up. The lighter-conditioned cows, perhaps 20 in number, are then drafted out into a block having access to a pampas plantation where they remain for the winter. The rest of the cows are thinly distributed over the ewe blocks where they are left till calving.

As calving takes place, calved cows are mustered, calves are marked, and cows with calves are put into blocks by themselves. The other cows are shifted and regrouped where necessary. Calving, which starts about the second week of September, is usually completed in December. The bulls are put out at the beginning of December and left with the cows till weaning time. When the bulls are put out, the cows run in five groups. The two-year-old heifers are grouped with the younger cows in one lot. From the weaned calves which have been running together until the end of June about 25 of the smaller and lighter-conditioned are removed, and fed hay for eight to ten weeks in a handy paddock. The others continue to run in one mob on one block till the spring when they replace young cattle in three steeper areas at the back of the property. At this time the two-year-old cattle which have been grazing on the back areas are mustered in and the steers are drafted off for sale. About this time, too, the two-year-old heifers are carefully gone over; the best 18 are retained for breeding and the rest are sold. Aged cows are taken out, freshened up, and sold soon after weaning.

In general, cattle management aims at making the most effective use of available stock, at controlling and improving hill pastures, and avoiding punishment of cattle themselves by too hard stocking.

Labour

During development of the farm, the permanent labour consisted of the owner and two men. In addition, contracts were let for work such as bush felling. In normal times, apart from the owner, two men are necessary for seasonal work and maintenance. During the war, one married man was employed, but there were periods when no labour was available. The usual extra labour is engaged for the seasonal work—shearing, lamb marking, and crutching.

The Homestead

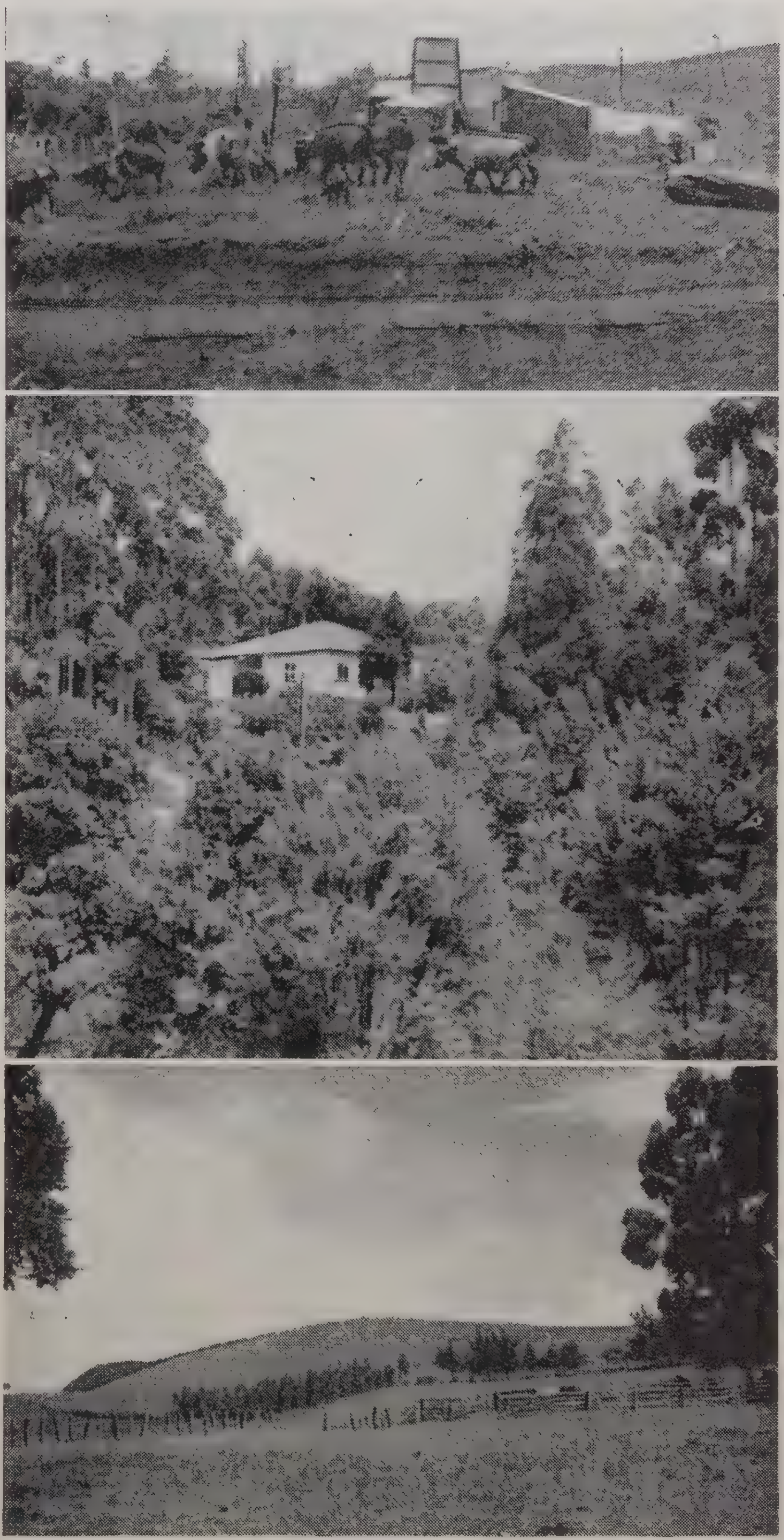
Pleasant living conditions and facilities for recreation are essential in back-country life. They check the dangerous drift from the areas which should be the strongholds of our pastoral life. The careful thought and planning given to the development of the farm have also been given to the establishment of the home. The site chosen, to the front of a terrace, is in striking contrast to the original wilderness of fern and blackberry. Today, the carefully-planned house with modern amenities and with surrounding lawns studded with shrubs and ornamental trees, flower gardens, and a tennis court is in a picturesque setting of native bush and plantations. An extensive area planted in fruit trees and seasonal vegetables and a citrus orchard provide a wide range of products for home consumption.

Acknowledgments

Thanks are expressed to the Soil Survey Division of the Department of Scientific and Industrial Research for data in the soil map and to the Lands and Survey Department for the drawing of the map.

Subscriptions to the "Journal of Agriculture" may be paid at any office of the Department of Agriculture or to the Publisher, Box 3004, Wellington.

THE HOMESTEAD



Upper—In the early 20's. Middle—Today. Lower—Shelter at the homestead paddocks.

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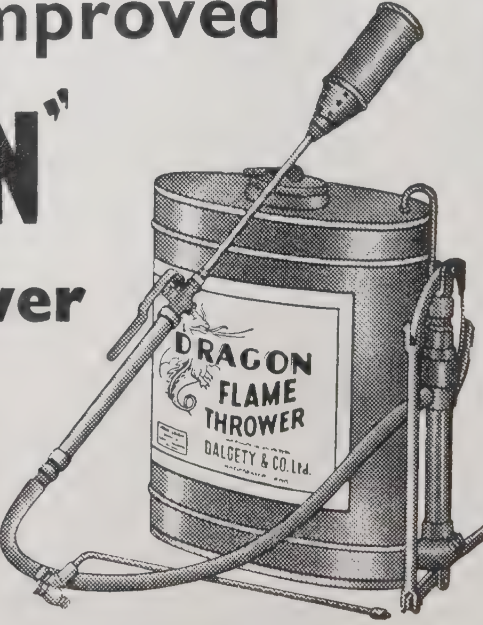

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Apples and Pears For April Harvesting

By A. R. GRAINGER, *Orchard Instructor, Christchurch.*

THE harvesting, grading, packing, and storage of apples and pears provide the principal work in orchards during April. The order of harvesting is closely related to the purpose for which the bulk of any particular variety is intended—for immediate marketing, for long storage, or for orchard storage.

THE principal varieties of apples to be harvested in April are Golden Delicious, Rome Beauty, Frimley Beauty, Sturmer, Statesman, Ballarat, Granny Smith and Lord Wolseley. Jonathan, Delicious and Cleopatra, if left until April, are more suitable for immediate marketing than for long cool storage, although in districts from Canterbury southwards, they may still be suitable for storage purposes. Tasma, Dougherty, and Yates may be picked towards the end of April or in the first half of May, according to locality and seasonal conditions. The harvesting period for pears does not extend as late as the harvesting period for apples. Varieties of pears to be picked in April include Beurre Easter, Keiffer, Winter Nelis and P. Barry.

Owing to the variation due to weather and condition of trees, a picking calendar should be used only as a general guide, the final decision as to the time for picking being based on careful inspection of each individual block of trees. If required, the local orchard instructor's advice on this matter may be sought.

Grading and Packing

In the second pick of a variety, the fruit from shady portions of the trees often carries a shade of colour lighter than the characteristic bright red. Apples of a shade lighter than characteristic red must have sufficient additional area covered to make the appearance equal to fruit carrying the minimum of full red colour for the variety.

Low or slack packs result from failure to make adjustments to the sizing machine when a change is made from one variety to another.

Grader-marking of fruit is mostly caused by failure to clean grader rollers and bins regularly, and by allowing packers to work with full bins all day where the grading is in excess of their capacity to pack. Handling some varieties too soon after picking also tends towards grader-marking.

Storage of Fruit

Varieties required for cool storage should be handled expeditiously through all stages to the store. Pears, particularly, should be handled from tree to cool store within a maximum of 48 hours, but reduction of this time should be aimed at. Sturmer apples, which are liable to mark considerably if put over a grader immediately after picking, should be held for four or five days before packing to harden the skin and reduce the tendency to marking.

Granny Smith apples may be delayed up to a maximum of 10 days between harvesting and placing in cool store, as this—unless oiled wraps are being used—will improve their keeping quality.

To reduce the tendency to wilt, apples and pears for orchard storing should be harvested in a slightly more mature condition than for cool storage. Orchard stores, which should be constructed specially for the purpose, should provide for the following:—

(a) Insulation—protection from sun;

(b) Protection from freezing in cold southern districts;

(c) Protection from birds and vermin;

(d) Protection from dust;

(e) Provision of free-air circulation but not severe draughts; and

(f) Adequate light and room so that provision may be made for examining fruit in store and handling varieties separately.

Fruit for storing should be free from punctures, disease, decay, breakdown, bitter pit, corky pit, eyerot, and any other defects likely to affect keeping quality.

Spraying

Spraying has to be considered carefully in conjunction with the spray-residue problem at this period. If pinhead black spot appears early in April on Dougherty apples not to be harvested until May, an application of Bordeaux 1½-2-50 would be advisable. Similarly, the presence of leaf roller (*tortrix sp.*) may require a spray of lead arsenate at 1½lb. per 100 gallons.

Planning Ahead

Two main items of work for May require—if best results are to be obtained—a certain amount of thought during April. One is the matter of tree replacements or extension of areas of orchard and the other is the ordering of equipment needed for the pruning season.

Fruit growers should check the condition and number of their orchard ladders, secateurs, and pruning saws, ascertain the quantity of wound dressing on hand, and order any equipment necessary. A bitumen product, unadulterated with any injurious substance, is one of the most suitable wound dressings.

Most orchardists need to buy young trees either for replacements or for planting additional areas of land. An extension in orchard area requires considerable study of the kind of fruit to grow, the variety, and the stock suitable to the locality. Each orchard presents its own problem in these matters.

Orchardists requiring trees for replacements should order early from a reliable nurseryman. The Fruit Tree Grading Regulations, 1945, which came into force on March 1, 1946, provide for three grades of pip and stone fruit trees, when sold in lots of more than 25, but do not apply to lots of one variety not exceeding 10 in number. The grade relates to the diameter of the trunk, taken 2in. above ground level for a fruit tree that has not been budded or grafted and 2in. above the union for a tree raised by budding or grafting. There are certain stipulations: Trees shall be well rooted, and shall have reasonably straight trunks, while, if branched, trees of either No. 1 or No. 2 grade shall have not less than three well-balanced branches each of which shall be not less than 18in. long. Any purchaser of fruit trees—ordered to specific grades from any nursery—who is dissatisfied with the grading and/or condition of the trees may make application in writing (within seven days of receipt of trees) to an inspector appointed under the Orchard and Garden Diseases Act, 1928, for an investigation into the transaction.

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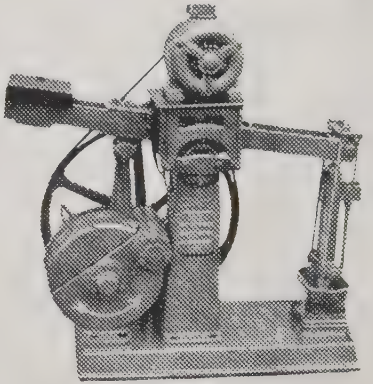

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FARM SHELTER

Local Conditions Determine Site, Direction, and Type

By T. E. RODDA, *Fields Instructor, Hamilton.*

FROM the aspects of climate and production New Zealand is freely acknowledged to be well favoured. Even so, in many localities, cold, biting winds at times greatly retard plant growth. This emphasises the importance of adequate farm shelter belts. Farm improvements of this kind, which lend themselves to the production of more abundant crops—and earlier in the year—are regarded as work of national value.

AS New Zealand is not only comprised of small islands of no great width, but is also surrounded by many miles of unbroken ocean, wind storms from all directions are likely. As New Zealand's mountain-chain systems tend to deflect these sea winds on reaching the land along certain defined tracts, no definite plan can be laid down for the country as a whole as to the direction shelter belts should be planted to form a barrier against the prevailing or worst winds. The question resolves itself into a study of each locality or tract of country needing shelter. When a decision is reached regarding the general course of the wind currents, shelter belts should be planted where they afford maximum protection.

Preliminary Planning

Where a settler is a pioneer in a locality, or where he has taken over a holding on which no attempts at improvements by shelter planting have been made, he should give the problem serious thought, study the future, and plan his first year's work as part of a master scheme that may be supplemented from year to year. The planting of the main belt or belts first is essential; smaller belts and dividing hedges may always be planted later. Extreme care must be exercised in selecting trees to suit the soil and locality. Types of trees already growing well in the locality or in a similar locality should be planted. Where there are no trees for guidance, advice should be sought from someone with special knowledge of tree planting.

A little extra care in early planning will pay handsome dividends. Mistakes are costly. Every effort should be made to avoid them.

Provided the planting programme is carefully mapped out ahead, the operations involved in preparing the land may be carried out systematically and at the correct times.

Types of Shelter

Shelters may be classified under three main headings:—

1. **High breakwinds to protect the holding against the worst prevailing winds;**
2. **Low, compact shelter to break the force of moderate winds and provide shelter for stock; and**
3. **Dense hedges to subdivide fields and shelter the fields themselves.**

There is no hard and fast rule that a high breakwind for all farms is essential. This is necessary only in exposed areas where heavy winds prevail. On many farms the lower compact shelter only is needed.

Experiments have proved that a shelter belt 66ft. high will afford protection for about five chains, and partial protection for about 15 chains. While the direction of these belts generally should be from north to south to give protection from the most prevalent winds, they should not be allowed to cause excessive shading in the winter. With an 80ft. shelter belt running east and west, a shadow 136ft. long will be cast even at midday during winter in North Auckland; the corresponding shadow in Southland will extend as far as 200ft. into the field.

This aspect, unfortunately, is sometimes overlooked, particularly when providing tall shelter around a dwelling house, and when setting out plantations on streets and roadsides.

Suitable Trees

The varieties of trees to plant for shelter are purely local questions governed by information gained through noting the varieties that do well in particular districts. Planting should be done accordingly. Consideration to the result aimed at, whether a shelter only, or both a shelter and timber proposition, must be given at the start.

The practice of planting trees in single lines is, with but few exceptions, ineffective, unless the farmer is prepared to maintain them by systematic topping and by trimming of the sides. Unless topped and side-trimmed many single rows of trees such as *Pinus radiata* and *Cupressus macrocarpa* become bare about their trunks at the base and heavily side-branched above. Such shelters cannot stop ground winds; they cause draughts and stock are much more comfortable in the open than near or under such belts.

Excellent trees for single-row planting on suitable soil, provided they are protected from stock, are *Cupressus Lawsoniana*, *Cupressus Benthamii*, *Hakea saligna*, Chinese privet (*Ligustrum sinense*), bamboo (*Arundinaria macrosperma*), Lombardy poplars, and Japanese red cedar (*Cryptomeria elegans*).

Planted 35 years ago: A good single-row shelter belt of *Cupressus Lawsoniana*. Note how well the trees are clothed with dense foliage down to ground level.

ABOUT SHELTER PLANTS

For Single Row

Cupressus Lawsoniana: This tree on suitable soil is the nearest approach to the ideal for single-row shelter. While it flourishes in free, well-drained alluvial or sandy soil, it is not recommended for heavy clay soils that lie very wet in winter, and dry out in the summer. If protected from stock it retains dense growth from the ground to a height of 40ft. or 50ft. and even more on really good land. Its useful life ranges from 40 to 60 years. Very intolerant of wet conditions it will die out quickly when its roots reach permanent water level if that level is too near the surface. For a single row, the trees should be planted 4ft. apart if a height of 20ft. to 25ft. needs to be maintained. If a height of 40ft. or 50ft. is desired, trees should be spaced 6ft. to 8ft. apart. This tree may be kept to the desired height by annual or biennial topping. Cutting-back into heavy wood should be avoided.

Cupressus Benthamii: This tree, which will thrive on all soils in which *Lawsoniana* flourishes, has the advantage of growing better on soils with a higher permanent water table. This tree also does better in the heavy and wet clay soils. A faster grower than *Lawsoniana* it has a wider spreading habit, and is inclined to open up more in the base. This habit may largely be controlled by shortening-in the side branches. This work should be started in the second year after planting, and continued at least every second year. Height can be controlled by light topping. Trees should be planted 6ft. apart for shelter 20ft. to 25ft. high and up to 8ft. apart for tall shelter.

Hakea saligna: Commonly known as the plain-leaved *hakea*, this is particularly suitable for heavy clay land, especially the gumlands of North Auckland, which, naturally of low fertility, are inclined to become water-logged and cold in winter with a tendency to crack badly in dry weather. It also succeeds on certain ironstone soils where most hedge trees fail. Well-rooted plants that have been properly wrenched before lifting from the nursery should be planted 2ft. 6in. apart. The land should be well prepared before planting and

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kept cultivated during the first year at least to encourage growth.

Protection from stock must be provided in the first 3 or 4 years. After this, stock do not worry it much. Annual light topping and trimming of the sides are recommended to keep the growth dense in the lower regions of the hedge.

Bamboo (*Arundinaria macrosperma*): This bamboo makes an excellent hedge for country too wet for satisfactory growth and development of most hedge species. Usually planted on drain sides this bamboo needs protection from cattle by wire fencing on the paddock sides.

Sets for planting may be obtained from an old-established hedge by cutting out blocks of roots 4in. to 5in. square and cutting the tops back to about 2ft. high. The best plan is to prepare a strip of ground 3ft. wide either by digging or ploughing and to place the sets 2ft. apart. To conserve moisture and suppress weeds and grass, cultivation during the first year at least is recommended.

This bamboo, which forms an extremely compact hedge 12ft. or more high, requires practically no trimming, and is recommended for wet localities where blackberries in hedgerows are troublesome.

Cryptomeria japonica and *Cryptomeria elegans* planted 4ft. apart. This shelter has been spoilt by the inner fence being removed and by stock being allowed to destroy the lower branches.

Chinese Privet (*Ligustrum sinense*): This species of privet is particularly good as a single-row shelter provided it is well protected from cattle for a few years after planting. The leaves are supposedly poisonous to stock if eaten in fairly large quantities, but this observer has not seen an animal poisoned by eating from the hedgerows.

Plants may be readily raised from seeds or cuttings. For planting, a strip of land should be prepared either by digging or ploughing. The rooted plants, which should be set in a single line 3ft. apart, should be trimmed very lightly after the first year and cut back heavily at the end of the second year to encourage a large number of strong shoots at the base. Moderate trimming is needed for the next three years, after which the trees need not be trimmed. In this way a solid, compact base is produced. Later, when cattle have nipped back the drooping ends of the branches, a dense overhead shelter that provides excellent shade and good protection from the wind and rain is formed.

Japanese Red Cedar (*Cryptomeria elegans*): Japanese red cedar, which makes a particularly good single-row shelter on suitable country, thrives on heavy clay provided it does not become water-logged. It also does well on silt loams. Rather slow-growing on heavy clay, it eventually attains a height of 35ft. to 40ft. and retains its lower branches right down to ground level. Propagation is by cuttings taken in March, calloused in sand, and rooted in well-prepared nursery beds. Planting 4ft. apart is recommended. The tree stands light side-trimming, but not cutting-back into heavy wood.

Lombardy Poplar (*Populus fastigata*): This is a tree very suitable for single-row shelter on deep alluvial, moist soil, and in many of the fruit-growing areas it is used extensively for protecting orchards.

Cuttings are made from wood from 1½in. to 3in. thick and 3ft. long. These are planted in holes made with an iron bar or a small post-hole borer. If, when the post-hole borer is used, the soil is rammed tight around the cuttings, a more even and consistent strike results. These cuttings should not show more than 9in. to 1ft. above ground. Shoots start from ground level. If these are headed back after the second year, they form a dense thicket of growth at the base. If

A good single-row shelter. *Hakea saligna* on hard country (clay). This shelter has never been trimmed, but has been well protected from stock.

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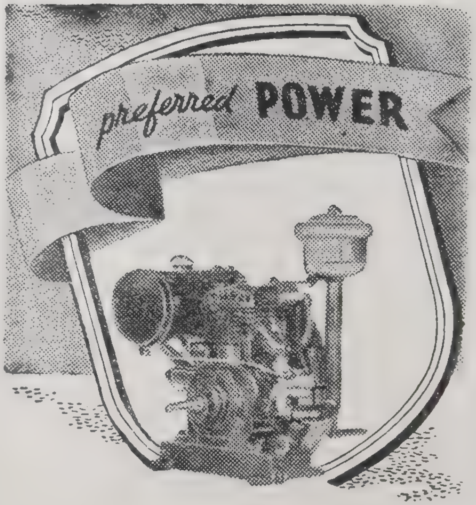

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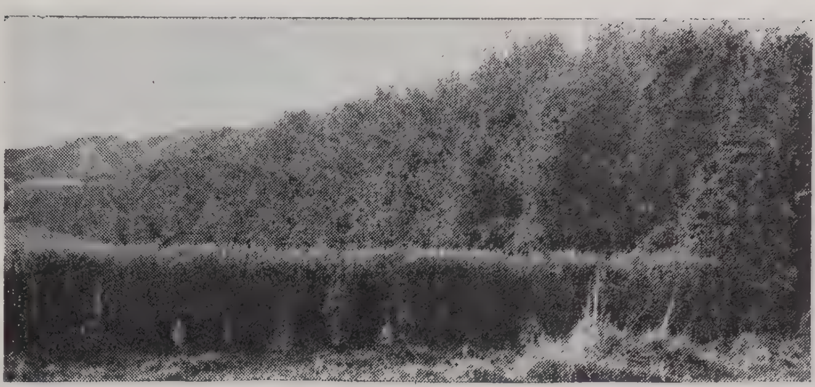
Farm Hedges

Farm hedges may be defined as the low type of farm shelters generally used to subdivide the farm to provide a reasonable amount of shelter for livestock.

Seedless Barberry: This flourishes on free, well-drained soil. It will not succeed on heavy clay soils that lie wet in winter, unless provision is made to improve the soil by ditching and banking, and planting on top of the bank. This method has one disadvantage: Cattle are inclined to mutilate banks by horning and rubbing unless the banks are amply protected by fencing until the barberry roots have become well established. On really suitable land barberry does not require much protection from stock. If the plants are set close to the wire of the main fence, two or three barbed wires on the paddock side are usually sufficient protection.

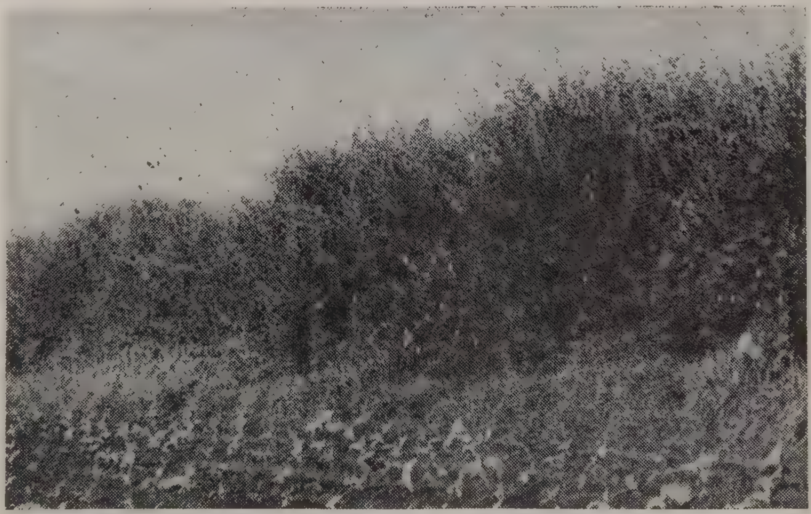
Cuttings should be rooted in a well-prepared nursery bed during the first year and set out as rooted plants the following year. For good establishment it is worthwhile to prepare a strip of land 1ft. to 1ft. 6in. wide alongside the fence and set the rooted plants 15in. to 18in. apart. For best results plants should be set leaning at an acute angle and parallel with the fence so that the head of the first plant is over the base of the second plant, the head of the second plant over the base of the third plant, and so on. In this way all buds drawn to the somewhat horizontal plane produce upright shoots, thereby inducing growth denser than would be obtained from plants set in an upright position. In this way, too, the large, open spaces often seen in barberry hedges may be averted. To keep the hedge dense at the base it is advisable to head back lightly during the first winter after planting. When the hedge has reached fence height annual trimming is needed. As the prickles lodge badly in wool, this hedge is not recommended for sheep farmers.

Acacia verticillata: This plant does well in clay country and especially in clay country overlying limestone. A fast grower, it attains a height of 4ft. to 6ft. in two years. This hedge, which should be well trimmed after the first year, should not be allowed to grow too high. Unless plants are well grown and properly wrenched in the nursery they do not transplant very successfully. The usual practice is to sow at the rate of 1oz. of seed per chain in well-prepared soil along the fence line. In most districts it is not advisable to sow until early September. Because of its prickles it makes a good cattle-resisting hedge.



Barberry hedges trimmed and untrimmed. The big hedge—on rich alluvial land—is used as a single-row shelter.

Single-row shelter. *Cryptomeria elegans* planted 40 years ago and never trimmed.



A single-row *eleagnus* shelter, once kept well trimmed, which has been allowed to run wild for three years. Note the trailing habit of growth which is a great advantage when the plant is used in conjunction with other trees.

A single-row hedge of African boxthorn that has had some trimming.

It is not popular with sheep farmers, however.

Hakea acicularis (prickly *hakea*): This does well on heavy clay soils, particularly in the gumlands of North Auckland. It makes a good cattle-proof hedge if kept well trimmed after the second year, but it will not stand cutting back into heavy wood. Many hedges of this species have been ruined by not being trimmed for several years and then being shortened back to a height of 3ft. to 4ft. Trimmed regularly they will last for many years. In localities where this hedge does not grow wild the usual practice is to prepare a strip of land from 12in. to 15in. wide along the fence line and sow seeds during September or early October in a single row 12in. apart. Seeds for planting are taken from one- and two-year-old nuts. To open the nuts they are heated in a hot oven, and the winged seeds are extracted. To hasten germination it is advisable to soak the seeds in water for at least a day before planting. Where plants are readily procurable, two-year-old plants should be selected, blocked out carefully with a sharp spade, and transferred to the new location as carefully as possible without breaking the ball of earth.

African Boxthorn (*Lycium ferocissimum*): This thrives in most soils and situations of the North Island, but does not grow in wet land or land that remains waterlogged even for a portion of the year. It does not appear to do very well on gravelly or shingly soils and, apparently, it does not like situations where the land in winter is sometimes frost-bound. With ability to stand salt winds it is planted widely in coastal areas where salt-laden winds are severe. It also grows moderately well in shady situations and beneath other trees. When properly handled it makes a stock-proof hedge, but it is not favoured by many farmers because of strong, sharp spines containing poisons which may cause painful wounds to animals and humans.

Plants which may be readily raised from seed in a nursery bed should be planted out as yearlings or two-year-olds, 18in. apart in a single row. The hedge, to be kept in really good order, should be trimmed annually or, at least, every second year. The practice of letting it grow naturally for 8 to 10 years and then cutting hard back is not sound because, when left to grow, it spreads out on both sides of the fence and smothers a lot of grass. Eventually, when it has to be cut

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Enemy of the hedgerow. **A hedge of *eleagnus* and barberry being smothered and killed out by honeysuckle.**

back, the work and time entailed are considerable.

Eleagnus (*parviflora*): Fairly extensively planted because it can adapt itself to a wide range of soils and climate, *eleagnus* thrives in hard, dry soils. It also does well in heavy, wet clays, and, with its ability to resist salt winds, can be grown on the sea coasts. Plants are raised from cuttings which should be allowed to establish roots for two years in a nursery before being planted out in permanent hedgerows. For low dividing hedges the best method is to sow plants in a double row, allowing 18in. between the plants in the row and 9in. between the rows. The plants of the second row, however, should be so placed as to cover the spaces between the plants in the first row. This helps to prevent the hedge from heeling over away from the wind when allowed to grow too tall.

Annual trimming of sides and top is necessary to keep the hedge a reasonable size. When the hedge grows unchecked long, trailing shoots sprawl out and occupy considerable ground on both sides of the fence.

Pampas Grass (*Cortaderia dioica*): Pampas grass makes a good and compact single-row shelter if planted 4ft. apart in well-prepared soil. While it flourishes on most soils where many other hedges fail, it does not thrive where the permanent water level is too near the surface. It is also recommended for planting near sea coasts where salt winds are troublesome. When establishing a hedge it is customary to prepare the land well and set out seedling plants which are now obtainable from many nurserymen. To promote quick growth the application when planting of a little manure such as blood and bone is worthwhile.

As this plant is greatly relished by cattle, good fencing is needed for protection. Although no trimming is necessary, for the plants to be kept thriving accumulation of dead leaves at the base should be avoided. A good plan is to turn cattle in to graze after the plants have been set out three or four years, but not before. Possibly the best time to graze off is during February, but only a moderate grazing is recommended. Grazing lower than 18in. from the crowns should be avoided. Cattle tramping between the plants break and tread into the soil many of the old dead leaves. Feeding-off in February allows the plants to refurnish and produce foliage sufficient to form some protection against winter winds. Suppression by grazing is recommended every alternate year.

Enemy of the Hedgerows

The Honeysuckle (*Lonicera periclymerium*) in some districts is seriously menacing several species of hedgerow. It is a strong grower, and with its creeping and twining habit quickly smothers out annually-trimmed hedges such as barberry and *eleagnus*. Some indication of the damage it does may be gained by studying the accompanying photograph. No time should be lost in rooting it out.

(To be continued).

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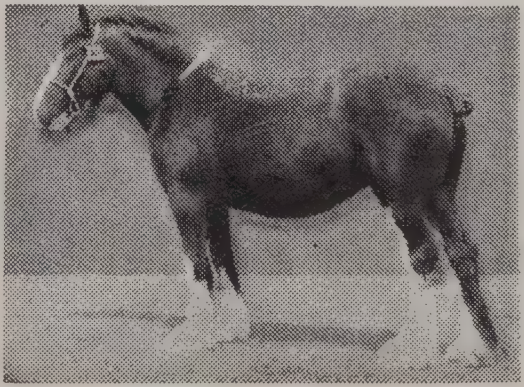

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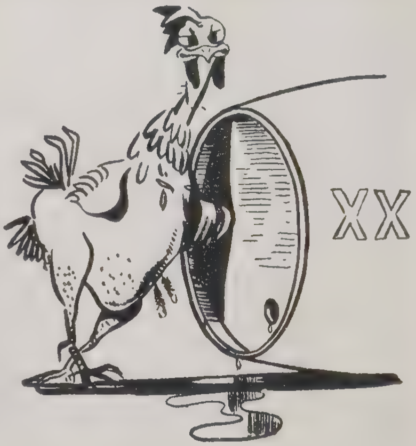

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Bluestone Topdressing Pays On Copper-deficient Peat Land

By I. J. CUNNINGHAM, *Superintendent Animal Research Station, Wallaceville.*

THAT the copper deficiency of most of the reclaimed peat land in New Zealand causes disease in cattle and sheep was reported in the "N.Z. Journal of Agriculture" in December, 1944.

THE disease which occurs in dairy cattle is called peat scours; notable symptoms are marked unthriftiness in young and adult stock, severe persistent and debilitating scouring during spring and sometimes in autumn, and considerably reduced production of butterfat.

In sheep, only the young are affected by copper deficiency in New Zealand and symptoms occur in lambs under about four months of age. The disease which affects this species is known as enzootic ataxia and symptoms are provoked by defects in the nervous system. These render animals incapable of using their legs normally so that a wobbly gait or even complete paralysis results.

Bluestone Recommended

The symptoms were fully described in the article already referred to; so, too, were details of methods which should be adopted to provide copper sufficient to prevent the diseases in cattle and sheep. Of the several methods described, the one advocated is the topdressing of the whole farm annually with bluestone at the rate of 5lb. per acre.

Farmers may want to know whether bluestone topdressing is a paying proposition. Information from two dairy farms which have been kept under close observation shows clearly the improvement in butterfat return that has followed the application of bluestone as a topdressing.

On these two farms herd testing was carried out in the 1943-44 season, before any copper was applied to the pastures, and in subsequent seasons when bluestone (copper sulphate) was applied to the whole farm each autumn.

The table accompanying this article, which summarises the observations made in 1943-44 and in 1944-45, permits a comparison to be made between pre-topdressing production and production in the first season after topdressing.

Average butterfat production per cow and total butterfat for each herd are shown and also the average butterfat per cow in the particular herd-testing group to which each herd belongs. The object of including the last-named is to give a measure of the effect of season on production so that this source of variation can be allowed for in assessing the influence of copper. For example, the season 1944-45 was a much better one, generally, for production than the 1943-44 season; it would be misleading to attribute to topdressing alone all the improvement in the experimental herds in 1944-45. The improvement relative to the group average is the significant figure and this is shown under net increase in the table on this page.

The table shows that the application of bluestone topdressing, carried out before the 1944-45 season, was accompanied by a considerable increase in butterfat production. In Herd 1, the average production per cow for 1943-44 was 50lb. below the group average, whereas in 1944-45 the average was only 14lb. below the group average. A net increase of 36lb. of butterfat per cow could fairly be attributed to the copper. The net increase calculated in the same manner for Herd 2 was 25lb. per cow. In each herd the gross total increase in butterfat production was approximately 5,000lb.

The expenditure on each farm necessary to achieve this increase in production was approximately £10 for bluestone plus the cost of labour for applying it. There is no doubt that bluestone topdressing pays on such farms.

Increased butterfat production is, moreover, not the only return for the outlay in topdressing. There is a spectacular improvement in the health of both young and adult stock. On copper-deficient country it is often impossible to rear calves; after topdressing with bluestone, growth and development of young stock are normal. Scouring and unthriftiness are banished from adult stock and the farmer is saved the task of handling and caring for unthrifty and ailing animals.

Full Information

Copper deficiency occurs on most of the peat lands of New Zealand. Farmers on peat soils should acquire a copy of Bulletin 238 (issued free and available on request from all offices of the Department of Agriculture), which is a reprint of the article previously referred to. This gives full information about the recognition and the combating of copper deficiency. Local field officers of the Department should be consulted for any supplementary advice.

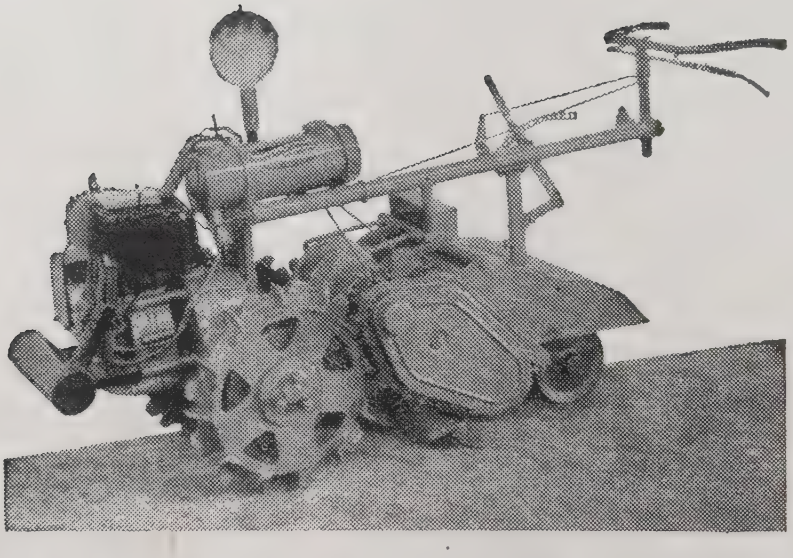
Topdressing with bluestone should be carried out in conjunction with normal autumn topdressing; there should be no delay if increased production is to be gained for the 1946-47 season. A copperised superphosphate now on the market is suitable for farms which require phosphatic fertilisers.

◆

LIME REQUIREMENTS OF SOILS.

Liming is common practice, but it is important that the lime should go to the place most in need of it. The principles underlying the determination of the lime requirement of soils will prove of practical value to farmers and are interestingly set out in Bulletin No. 240, "The Lime Requirement of Soils," which is obtainable free from offices of the Department of Agriculture.

	Herd No. 1.					**Herd No. 2.**				
Season.	Average Butterfat/ Cow in Herd Testing Group. lb.	**Average Butter-fat/Cow in Herd. lb.**	Difference. lb.	**Total Butterfat for Herd. lb.**	No. Cows.	Average Butterfat/ Cow in Herd Testing Group. lb.	**Average Butter-fat/Cow in Herd. lb.**	Difference. lb.	**Total Butterfat for Herd. lb.**	No. Cows.
1943-44 ..	248	198	—50	12,302	62	243	214	—29	15,119	71
1944-45 ..	283	269	—14	17,192	64	265	261	— 4	19,870	76
Net Increase			36	4,890				25	4,751	



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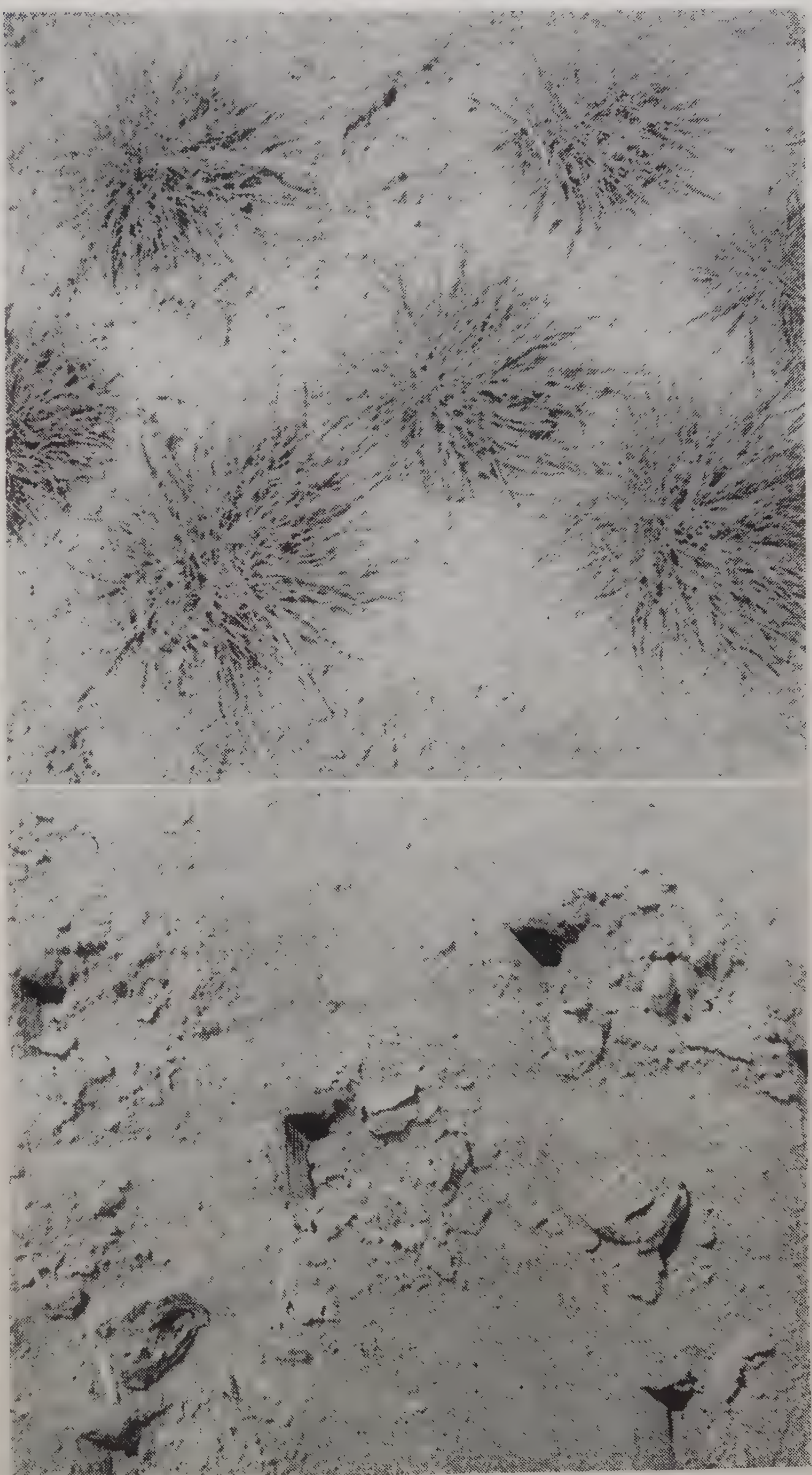
COMBATING WIND EROSION WHEN SOWING GRASS



FOR the successful establishment of a permanent pasture, a fine, firm seed-bed is generally considered to be required. The degree of fineness, however, is largely a question of soil and climate, and the final cultivation should be governed by local conditions. The following observation by F. J. S. Holden, Fields Instructor, Dannevirke, illustrates what occurs when the seed-bed is worked up too finely in a district subject to heavy winds.

THE upper photograph shows a square foot of a 12-acre paddock in Southern Hawke's Bay which was sown down to permanent pasture last spring. The pasture plants are obviously evenly and regularly spaced in lines across the field.

The lower photograph, which shows the plants removed, indicates that each patch of grass has established in the lug marks of the tractor used in cultivating and seeding the paddock. The rest of the paddock is completely bare. What has happened?

The Wind Factor

The land was worked down to a good tilth and rolled before and after sowing. Everything was in order for a good strike and coverage of the ground. At this stage, however, the effect of the wind was felt, as is so often the case on certain soils in some localities in New Zealand, especially in Hawke's Bay in parts of the Porangahau district and along the foothills of the Ruahines. All soil to a depth of about 1in. was removed together with the seed other than that which lodged and found shelter in the lines of tractor-wheel lug marks across the field. The result was lines of evenly-spaced small patches of grass in an otherwise bare paddock.

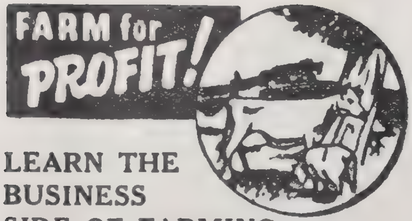
Could the farmer, who was a newcomer to the district, have done anything about it? Definitely, yes.

Use of Sheep

Where soils are subject to severe wind erosion the land should not be worked as fine as usual on the surface. Instead of rolling to obtain consolidation and a fine surface to the seed-bed, the seed should have been sown on a slightly-cloddy surface and consolidation and coverage of the seed should have been obtained by carefully driving as large a mob of sheep as possible over the paddock to tramp the whole area firm.

The slight cloddiness gives the sheep something to work in with their feet which press the soil down firmly over the seed without breaking it, as the roller does, into fine, separate particles which are so easily lifted by the wind.

Farmers who are experienced in sowing down under these conditions do not use the roller; they use sheep for consolidation and coverage of the seed with, generally, satisfactory results.



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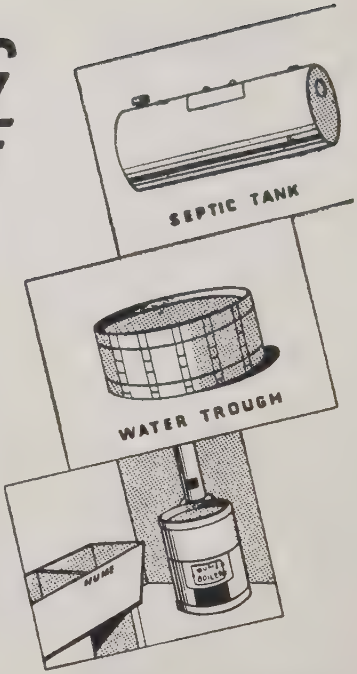
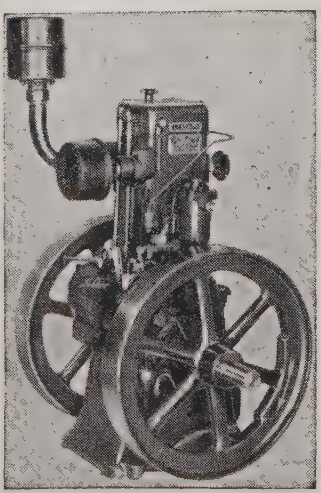


FROM WAR TO PEACE . . .



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VALUE OF GRIT AS POULTRY FEED

By **F. C. BOBBY**, *Superintendent of Poultry Husbandry, Wellington.*

WHILE few, if any, poultry farmers would disagree with the statement that poultry require grit, opinions differ about the types of grit and about the ages at which poultry should receive this feed. With supplies of grit not so readily available now as in the past, poultry farmers may be faced with the prospect of buying types of grit with which they have had no previous experience. As a guide to those in doubt, grits and their value to poultry are dealt with in this article.

POULTRY require grit for two purposes, to grind up food in the gizzard. and to obtain adequate supplies of mineral material for shelling their eggs. When eaten, grit lodges in the gizzard where it is mixed in with the various foods eaten—grain, mash, and greenfood. The unusually powerful muscles of the gizzard exert a continuous masticating or grinding action on this food. In order, however, that this grinding action shall be **efficient** in breaking down grain and fibrous meals a quantity of **hard, angular** grit must be present. For this reason poultry (and wild birds) have an instinct for picking up small stones or hard material of a similar nature. Under poultry-farming conditions (for a variety of reasons) a natural supply of stones may not be available as, for instance, where birds are run intensively or where they run out on to a good grass sod. To guard against poultry being short of this grit, which is so essential for sound digestion of food, poultry farmers are advised to keep a supply readily available before their birds at all times. Unless the grit is hard the purpose for which it is intended is not served. Furthermore, if the grit is hard and angular the amount required annually is strictly limited. If angular and of the required size, grit will be retained in the gizzard indefinitely but, as it is worn down in size and rounded in shape by the continual grinding action of the gizzard, it is liable to pass out of the gizzard through the intestines and emerge with the droppings. Experiments have shown that grit of the correct type will remain in the gizzard for 12 months.

Mineral Salts

During a period of high production. there is a heavy drain upon the mineral resources in a bird to supply lime for shell formation. The majority of foods eaten by poultry contain mineral salts including lime, but this source of supply is often insufficient to meet the heavy demand for lime for shell formation. Poultry farmers are advised to include 2lb. of a mineral mixture in every 100lb. of a laying mash and of this mineral mixture 1lb. should be a substance rich in lime, such as limestone flour or oyster-shell dust. In ordinary circumstances this is sufficient to supply the lime required, but to afford a further safeguard against a possible lime shortage poultry farmers are recommended to place a lime-rich grit before their birds. This grit should be comparatively soft so that it is readily broken down in the gizzard and the lime released is capable of going into solution ready for assimilation into the blood stream through the lining of the intestines.

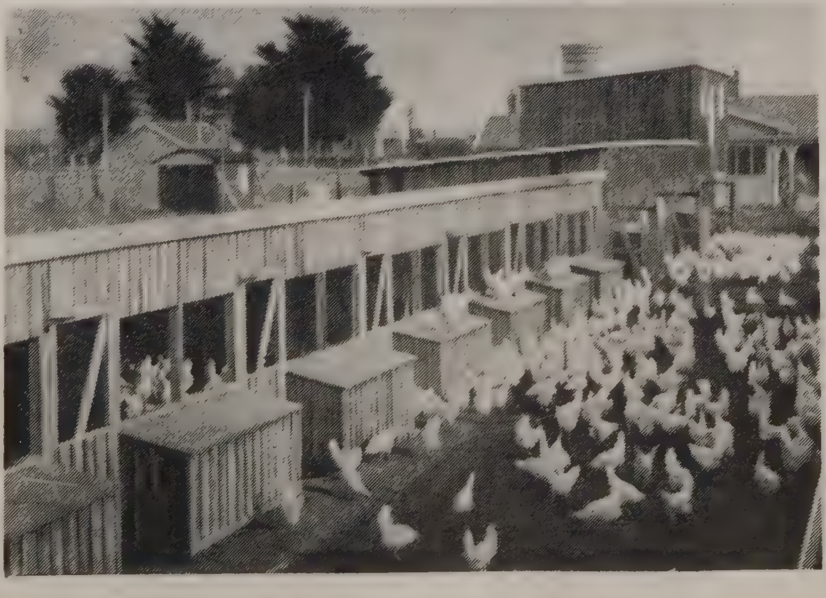
On the one hand a **hard** grit is required for digestive purposes; on the other a softer grit rich in lime is needed for shell production. There is, however, a section of poultry farmers in Great Britain who believe that a dual-purpose grit can serve both purposes. These men use a ground-limestone grit which, it is claimed, is sufficiently hard for grinding purposes in the gizzard and yet sets free sufficient lime for shell formation as the grit slowly breaks down under the grinding process in the gizzard.

When to Feed Grit

Hard grit for grinding purposes is required whenever food is eaten—from a day old onwards. The necessity for varying the size of grit according to the age of the bird is obvious. Newcomers to the industry will find that grits are sold in different sizes for birds of various ages. A grit rich in lime is not required until just before birds come in to lay. Tests to check grit consumption show that the quantity of lime grit eaten is directly proportionate to the output of eggs. Grit consumption for lime increases just before an increase in egg production and falls off again just before production drops.

This confirms the suggestion that birds during a production period have an instinctive craving for additional lime.

Some poultry farmers feed a lime-rich grit to young chickens, using oyster shell in a fine or dusty condition. Additional lime at this age is useful for hardening the bones, although minerals for this purpose should be included in mash. There is doubt as to whether fine oyster shell is sufficiently hard for grinding pur-



Exercise, fresh air, and sunshine are assets to production.

poses in the gizzard; a small, hard-metal grit is preferable for this purpose.

Types of Grit

Grits may be divided into the two classes already discussed.

A. Hard grits for grinding purposes.—Any hard metal grit will serve this purpose—but preferably grits which are angular rather than rounded. Sharp-pointed stones will not harm the lining of the gizzard; it is far too tough. Such stones are usually rounded-off before passing down the intestines. Sharp flint is commonly used overseas for young and fully-grown birds without harm to the birds. In New Zealand, blue road-metal grits, shingle grits from river beds, and finely-broken scoria are available.

B. Lime Grits.—By far the most popular grit rich in lime is crushed oyster shell. There is agreement among many practical, commercial poultry farmers that birds readily eat oyster shell with subsequent good effect upon the shells of their eggs. It is possible that the lime present in oyster shell is more readily assimilated by poultry. However, if oyster shell is not available, pipi- and cockle-shell grit will be found satisfactory. A further satisfactory source of lime for shell formation is a moderately hard limestone ground to a size suitable for poultry. Limestone suitable for this purpose should contain over 90 per cent. of carbonate of lime, and should not contain more than 2 or 3 per cent. magnesium carbonate.

Experiments show that limestone is as satisfactory as oyster shell for poultry. Since the surplus stocks of oyster shell in the South Island have been exhausted and plentiful supplies are no longer available this fact should be well considered at the present time.

A sound laying mash, which includes 2 per cent. mineral mixture (1lb. limestone flour and 1lb. common salt to every 100lb. of mash) together with free access to limestone grit, will afford all the lime needed by a healthy bird.

Answer to Correspondent

Warts on Livestock

Mr. N.D., Papakura:—

I have a nine-year-old gelding whose nose is one mass of warts (the type referred to as seedy warts). They have been on him only since the spring, and at the time of writing they appear to be getting worse. Will they disappear or will he have to have some treatment? If so kindly let me know the remedy.

LIVESTOCK DIVISION:—

Warts are true skin tumours and are usually found where the skin is tender, on such parts as the muzzle, eyelids, elbow, lower abdominal wall and sheath, and posterior surface of the ears, and in cows on the udder and teats. These growths are caused by a virus and consequently are contagious.

The warts on your gelding may remain as they are or may increase and extend to other parts of the body. In some cases, extending over months or longer, warts may completely disappear without any treatment whatsoever. If the warts are attached by a thin neck, they may be removed either by clipping off with sterile scissors or by tying a sterile ligature tightly around the neck close to the skin so that the growth will slough off in a few days; the remaining root of the wart should be painted with tincture of iodine. Before warts become excessively large they may be destroyed by the daily application of tincture of iodine or castor oil.

In cases where warts are numerous and cover large areas of the body, internal treatment may be given in addition to external applications; for this purpose one or other of the arsenical preparations may be used, but only under veterinary supervision.

A wart vaccine is now being used to some extent but so far is only in its experimental stage.

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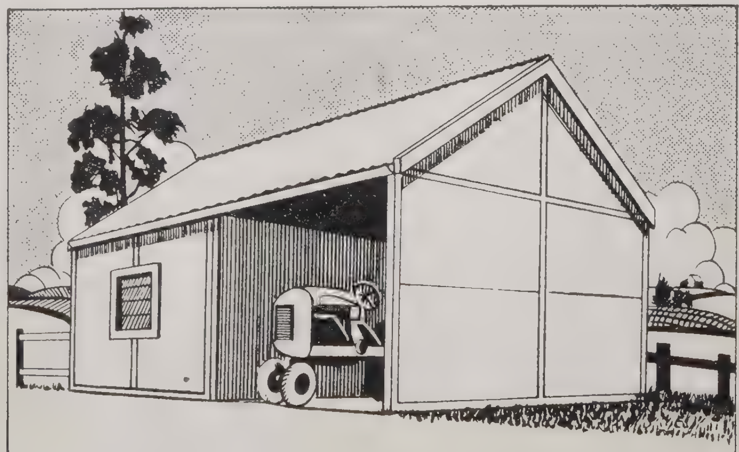

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FACIAL ECZEMA DANGER

IF RAPID PASTURE FLUSH OCCURS

THE extremely dry weather which has been experienced in the past few months in the Hawke's Bay, Poverty Bay, Bay of Plenty, Waikato, and North Auckland districts has caused farmers to become considerably concerned over the possibility of a disastrous outbreak of facial eczema similar to that which occurred in 1938. Although extremely dry, the weather this year has not been unusually hot, and as temperatures have not approached those experienced in the early months of 1938, it is hoped that this factor may modify the severity of any outbreaks of facial eczema which may occur.

UNFORTUNATELY, however, livers collected at the meatworks from lambs forwarded from the dry areas have in an alarming percentage of cases shown changes characteristic of the early phases of facial eczema. This is most unusual, as such changes rarely occur before the first autumn rains. So far the liver damage has not been sufficiently severe to cause any disturbances in the health of the lambs, and providing they do not become worse, complete healing should take place. However, the present condition of sheep livers in the dry areas is likely to render them especially susceptible to the effects of toxic autumn grass. Farmers should, therefore, take all possible precautions to avoid trouble.

In most cases dairy cattle will already be receiving silage and this should be continued. Wherever possible the feeding of hay to sheep should be commenced immediately.

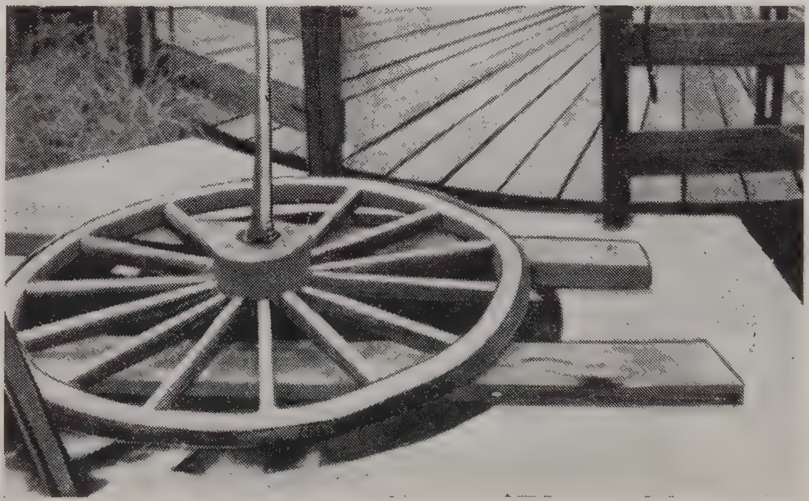
It is not likely that any serious outbreak will occur until sufficient rain has fallen to cause the rapid flush of pasture, but should such rain fall during the next two months while temperatures are still high conditions will become extremely critical and farmers must act immediately. It will then be necessary to reduce to a minimum the consumption of the pasture which grows during the first fortnight after the rains start.

Farmers who are sufficiently fortunate to have irrigated pasture or other pasture which has remained green during the summer, or crops such as rape, turnips, or lucerne should transfer as many as possible of their stock to them. Paspalum is generally safe as are native pastures growing on hill country. It should be noted, however, that ryegrass growing among paspalum and ryegrass growing in the gullies and on lower slopes of hill country may be particularly dangerous. The most dangerous pastures of all are, of course, those dominant in ryegrass and clover growing on fertile flats and rolling country. Unfortunately only such pastures are available in many farms in the affected areas. In such cases the consumption of such pasture must be limited by the confining of stock to very small areas. Dairy cattle should be herded together in a small paddock and fed silage and hay. Sheep should be crowded into small paddocks at a rate of not less than 100 to the acre and fed hay.

It is absolutely imperative that action should be taken as soon as the first autumn rains fall in sufficient quantity to produce growth. If the weather remains warm and showery precautions must be continued until such time as the pasture shows signs of hardening. If the rain is accompanied by cold weather or followed immediately by hot dry weather, it should not be necessary to continue the precautions very long. Farmers would, however, be well advised to err on the side of safety, as short periods of semi-starvation would cause less harm to their stock than the severe type of facial eczema which might well occur this year.

It cannot be over-emphasised that precautions will be quite valueless if they are delayed until signs of the disease occur. They must be taken immediately rain falls.

PREVENTING DROWNING ACCIDENTS IN SHEEP DIPS



REPORTS of small children being drowned in sheep dips appear in the Press from time to time; a little boy of 4 was drowned last December in the Auckland Province, and for every fatal accident there must be many more narrow escapes which receive no publicity. These mishaps seldom occur during the actual dipping season, but usually later on when no adults are around and the warnings not to play near the dip have been forgotten.

The fencing in of a dip to exclude children is usually quite impracticable, and so is the suggestion to leave it empty, because even if it does not fill up with rain water, the deep cavity is still a menace to small children. The only safe way is to cover the dip over when not in use in such a way that children cannot remove the cover. The illustration shows an improvised but quite effective method of doing this by the use of an old wagon wheel lying on two boards across the dip. The weight alone is sufficient to prevent it being shifted by children.

KEEP THEM MOVING

In 1945 the New Zealand Railways carried 1,202,850 tons of lime and fertiliser from the works to the farmer. Material for autumn topdressing makes heavy demands on the available transport.

One of the main factors contributing to the high production from New Zealand pastures is the extensive use of lime and fertilisers for topdressing. It is very necessary to get further supplies on to the land as they become available. Autumn topdressing is of particular value in stimulating pasture growth before winter, thus helping the winter feed position.

The chain of supply is interrupted every time there is delay in unloading the trucks which carry these vital commodities to your farm.

HELP YOUR NEIGHBOUR TO GET HIS MATERIAL FOR
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FARM WORK FOR APRIL

PASTURES

Autumn Sowing

Sowing of burns should be completed as soon as possible. It is not too late to complete autumn sowing of pasture on light soils in mild climates on cultivated ground. Even up to the end of April such sowings may give better results than spring sowings.

It is too late, however, to sow Italian ryegrass for provision of winter feed except in warm climates on light soils, and even there oats and barley for greenfeed will give better results.

Topdressing

Autumn application of lime and phosphate fertiliser should be completed this month. Later applications of phosphate are of little use in increasing winter growth, and damage may even be caused and difficulty encountered in the traversing of fields and gateways with heavy loads of fertiliser and lime.

Where sulphate of ammonia is available applications at 1cwt. per acre may be made to ryegrass fields in good fettle to provide winter feed. Except in mild climates such fertilisers are often not effective after April.

Management

On North Island dairy farms fields should be closed in rotation to provide winter grass for early-calving cows. Choose ryegrass fields in good heart for this purpose.

Fields carrying much roughage should be mown or stocked with cattle, preferably dry cattle or dairy cows at the end of their lactation.

Early autumn-sown pastures will be ready for feeding this month. They should be fed off with light stock if the ground is wet, preferably with sheep, and sufficient head of stock should be grazed so that the eating off is rapid. Close the field again as soon as the grass has been grazed to a moderate height.

Harrowing

As soon as autumn rains have moistened the ground and softened the dung voided during the autumn, fields should be harrowed to scatter it and spread its beneficial effects and prevent smothering of any pasture plants which otherwise would not make a contribution to the early winter supply of feed.

HAY AND SILAGE

Stack Protection

See that stacks are properly protected from heavy winter rains. By now haystacks will be well consolidated and no further adjustments to weights holding down covers should be required. Fences surrounding the stacks should be inspected for any weak places, for as feed grows short cattle are more inclined to attempt to break them down.

LUCERNE

Weed Control

After the last cut lucerne stands may be cultivated, unless the soil is dry and hard, with penetrating harrows and cultivators to destroy weeds. This operation could produce a tilth for sowing oats for production of late winter or early spring greenfeed.

CEREAL GREENFEED

Algerian oats or Cape or Black Skinless barley sown in April at 3 bushels per acre will produce a fair amount of late winter and early spring feed. The barley should be sown early in the month on a light, well-drained soil. Oats withstand wetter conditions and may be successfully grown on the heavier soils and later than the barley.

ROOTS AND CRUCIFEROUS CROPS

The feeding of soft or yellow-fleshed turnips usually commences in Canterbury this month. The tops should be fed to hoggets and sheep with poor mouths and the bulbs to sheep for fattening, followed by sound-mouthed breeding ewes. Feeding should be carried out in breaks and a run-off on pasture should be provided.

POTATOES

Digging of the South Island main crop commences this month, and the digging machine should be overhauled and an endeavour made to cushion the working parts to prevent abrasion of the potatoes. See that sufficient supplies of sacks, wire, and needles are on hand and transport is available. Prepare pits for the produce.

CEREALS AND PEAS FOR GRAIN AND CHAFF

Malting Barley and Oats

Early attention should be paid to sowing malting barley in those districts where autumn sowing is the practice. The seed should be sown at 1½ to 2 bushels per acre through every coulter.

Oats for grain or chaff should be sown this month at 2 bushels per acre.

Cultivation for Autumn-sown Cereals

All deep ploughing for wheat should be completed this month, to be followed immediately by heavy tine harrows and the cultivator, and followed again by tine harrows until the land is fit for drilling. The roller may be required to assist in achieving this condition.

The aim is to have a soil fine and firm below but with small clods on top. The same soil conditions are required for sowing all autumn-sown cereals including barley and oats for grain or greenfeed.

Maize

Turn sheep into maize crops for cobbing to eat out undergrowth. Get the cribs ready to receive the cobs at harvest time and see that they are vermin proof.

STOCK

Feeding Young Stock and Pigs

Feed hay and roots to calves and hoggets before the pasture growth declines so that they may become accustomed gradually to their winter keep. Pigs should also be introduced to their winter diet before the milk supply ceases.

Supplies of maize in the green cob stage will now be appreciated by dairy farmers who will want to dispose of the summer litter before winter sets in. The pigs will readily consume the whole plant at this stage.

See that stock enter the winter in good condition.

Tupping

Rams should be in good hard condition before tupping, which is now over in parts of the North Island but is commencing in the South Island. Both ewes and rams should be dagged and dipped before the rams are put out.

GENERAL

Trees and Pampas Grass

Except in cold districts subject to heavy frost the soil should now be prepared for planting trees and pampas grass next month. Pampas requires good conditions for establishment, and cultivation should be thorough. Fencing to protect trees and pampas grass should be carried out before commencing planting.

Pig Sties and Yards

On most dairy farms the pig population will soon be at a minimum and the opportunity should be taken to effect repairs to pig sties and yards, put up additions, do concrete work, make feeding buckets, and do all those odd jobs which make work easier in busier periods.

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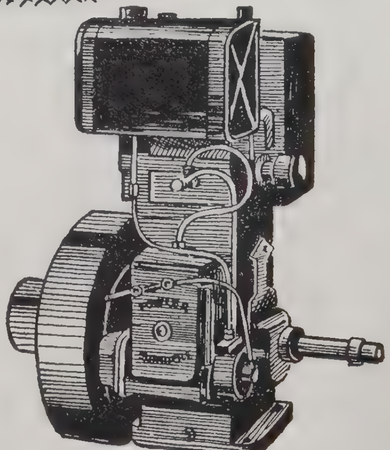

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AUTUMN-SOWN CEREALS

By **A. V. ALLO,** *Instructor in Agriculture, Tauranga.*

RECENT reports of the great world shortage of cereals accentuate the vital need for sufficient wheat, oats, and barley to be grown in New Zealand to meet our own requirements. In this article cultural practices for these three main cereal crops are discussed and their climate and soil requirements outlined with a view to encouraging an extension of the areas previously planted in the respective crops.

ALTHOUGH the main wheat-growing districts of New Zealand are Canterbury, North Otago, and Marlborough, wheat is also grown in parts of the Nelson district, Southland, Central Otago, and the southern part of the North Island.

Climate and Soil Requirements

Wheat is a fairly hardy plant, capable of growing within a wide climatic range. Nowhere in New Zealand is the climate too cold for wheat, although occasionally a late frost at flowering time will do much damage, while frosts after the grain is formed may reduce the yield and spoil the grain for milling purposes. It is not usual to grow wheat in areas where the rainfall is greater than 45-50in. per annum, while the bulk of the crop is grown on areas with an annual precipitation of 20-30in. Spring and early summer rain is required for maximum crop production, with ample soil moisture after flowering to fill the grain, and warm dry weather for harvesting.

A fairly wide range of soils is suitable for the growing of wheat, which does best on a good, well-drained loam of medium to high fertility. The heavier types of soil tend to produce too much straw with consequent lodging of the crop at harvesting time, while on very light country the serious depletion in soil fertility that occurs does not warrant the growing of this crop.

Rotation and Seed-bed

In the major wheat-growing areas wheat almost invariably occupies the most favourable place in the rotation, being commonly grown after grass, peas, potatoes, or rape

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The Major is a development of the world-famous Fordson Tractor which played such a vital role in England during the critical war years—when British farms magnificently met a vast demand for food, and with 140,000 tractors in operation— **78% of which were Fordsons**—*became the most highly mechanised in the world.*

BIG NEWS for New Zealand farmers is the arrival from England of the FORDSON MAJOR Tractor—*an entirely new model.* It's big, ruggedly built, with *far greater power* and *outstanding drawbar performance.* It has *new weight distribution, 17 inches ground clearance.* It is ideally suited to New Zealand conditions. A great number of important new features are designed to speed production, to minimise farm labour, to cut costs and to provide ease of operation and trouble-free performance. The FORDSON MAJOR will do everything you need and expect in modern farm power. Its capabilities have been conclusively proved in wide actual use in England and Australia. Limited numbers are available for immediate delivery.

NOW ON DISPLAY AT YOUR FORD DEALERS

FORD MOTOR COMPANY OF NEW ZEALAND LIMITED LOWER HUTT 2 following grass. On the heavier country two successive crops of wheat may be grown with satisfactory results, although this practice encourages weed development, particularly twitch.

Thorough preparation of the seed-bed is essential. For autumn and winter sowing the seed-bed should be deep, well-worked, and firm, with the soil surface rubbly rather than fine, while for a spring sowing the same conditions should apply except that the surface can be left much finer. If the soil surface is too fine during the winter, it tends to cake, with ill effects on the crop.

In preparing grassland for wheat it is advisable to skim plough and work down the turf prior to deep ploughing. Where wheat is grown after another crop the work necessary to prepare the seed-bed will depend upon circumstances. After such crops as rape, peas, or potatoes a deep ploughing followed by adequate surface cultivation will usually be satisfactory. The secret of success is early and thorough working, and crops grown on a hurriedly-prepared seed-bed usually reflect the poor cultivation in a low yield.

Wheat is a fairly heavy feeder and needs an application of a phosphatic fertiliser if maximum results are to be secured. The full allocation of fertiliser available, namely 1¼cwt. in the South Island and 2cwt. in the North Island, should be applied.

Sowing

In a normal year the bulk of the crop is sown in May and early June, except in the wetter, heavier country, where spring sowing in August and early September is preferred. Wheat is a deep-rooted plant, and can stand a reasonably deep seeding, the normal sowing depth being 1½-2in. In Canterbury the usual rate of seeding is 1½-2 bushels per acre, with the lighter sowing recommended on lighter soils. In spring the heavier rate of seeding should be sown, as the germination may be lower, while a spring-sown crop produces less tillers than one sown in the autumn, particularly in dry weather.

Varieties

The variety recommended varies according to the locality in which the crop is to be sown. Cross 7 is by far the most popular variety, and is to be recommended for the bulk of the wheat land of both Islands. On the lighter South Island country Tuscan and Fife Tuscan are better than Cross 7, while Hunters and Dreadnought should be used on the heavier country. Full details of the major wheat varieties and where they should be grown were given in an article by the Seed Certification Officer in the "Journal of Agriculture" for February, 1944, page 99.

For sowing autumn cereals the soil should not be worked down too finely, but should be left with rather a rubbly surface.

In all cases growers are urged to sow Certified seed, and to ensure that the seed has been treated with one of the organic mercurial dusts for the control of stinking smut.

The Young Crop

In the spring it normally pays to roll the autumn-sown wheat crop to consolidate the soil round the roots of the plants, especially after a dry winter. Sometimes such a rolling is followed by a stroke of the harrows, particularly on stiffer country. If a crop is inclined to be rank in the spring, it is advisable to feed it off in an endeavour to avoid serious trouble from mildew or rust and to avoid too much flag. Feeding off should be done when the ground is reasonably dry, and it is better to use a heavy concentration of stock for a short period rather than have a few sheep on the area for a longer time. Feeding off should not be left too late, and, after the sheep have been removed from the area, it should be harrowed to break the surface crust.

Harvesting

Time of harvesting largely depends upon the variety and upon seasonal conditions. Varieties that shake easily, such as Hunters, are often cut before they have fully ripened in an endeavour to reduce losses. Wind-resistant varieties like Cross 7 and Tuscan are usually allowed to ripen thoroughly before they are harvested. The crop may be cut with the reaper and binder, and threshed from the stook with the wooden or tin mill, or may be headed direct with the header harvester. The first method is commonly adopted with varieties liable to shake, but the header is used almost universally for handling wind-resistant varieties. Before wheat is headed it is necessary that the maximum conditioning should have taken place in the crop, with the moisture content reduced to a minimum. The Wheat Research Institute offers a useful service in this connection, being prepared to test samples of grain for moisture content before the crop is harvested.

OATS

By far the greatest area of oats grown for grain or chaff is in the South Island, principally in Canterbury, Southland, and Otago. In the North Island, outside of the Wellington Province, only small areas are grown, the crop being used mainly for chaff.

Growth Requirements

Oats have a shorter growing period than wheat and are less dependent on early summer rain. The shorter growth period will also permit of the crop being sown further south, where autumn rains would interfere with the harvesting of wheat. Under conditions of high rainfall and warm temperatures there is over-development of the straw at the expense of the grain, increased infection from rust, and a strong possibility that the crop will lodge, with consequent harvesting difficulties.

Oats are rather less winter hardy than wheat, and in the colder and wetter areas are usually sown in the spring. On lighter, drier country autumn sowing in May gives superior results.

To give best results oats require a free-working loam, not too rich, and well drained. They are, however, grown on many soil types, ranging from the light Canterbury Plains country to the heavier soils of the North Island.

Rotation and Seed-bed

As wheat is a more remunerative crop than oats, it normally takes the most favoured place in the rotation. Although good crops of oats may be obtained after grass, it is more usual to sow the more remunerative wheat crop. However, on land that is too light for wheat, oats are often sown after grass, or after rape grown subsequent to grass. Oats are commonly grown after wheat on the better-class country with good results, although there is the danger of spreading twitch. Oats are often sown in the spring after swedes and turnips, particularly in Southland.

The seed-bed should be prepared early and receive thorough working, the aim being to have a seed-bed free of clods or large lumps, yet not so fine that it will run together in wet weather.

In the South Island the normal rate of seeding for the autumn-sown crop is 2 bushels per acre, while in the North Island a seeding of 2½-3 bushels is more common. The seed is drilled through all the coulters of the drill, and should be treated with one of the organic mercury dusts to control smut infection.

Varieties

The variety of oat sown depends largely on the location of the area and the purpose for which the crop is grown. In the warmer districts with good rainfall Algerians are by far the most popular because of their resistance to rust. This variety is also favoured in Canterbury and the North Island where it is the favourite chaff oat. It will stand successive feeding off after a favourable winter. If care is not taken to give new season's Algerians time to mature after harvesting before they are sown germination is poor. The Gartons varieties are the most popular milling oat, and are generally spring sown in Southland, and autumn sown elsewhere. They usually stand one grazing in the spring when autumn sown, but are inclined to lodge on heavy country in wet weather. Duns, which is a popular autumn-sown oat of Southland, will stand more feeding off in the spring than will Gartons, although the quantity of feed produced is not very great, while its sprawling habit of growth makes the feed rather dirty. The grain of this variety is highly popular with racehorse owners.

The allocation of ¾cwt. of phosphate per acre should be drilled in with the seed. It has been demonstrated that serpentine superphosphate will generally give as good results as straight superphosphate.

Grazing

In most seasons it is possible to graze off the oats in the spring, except on very light country. The amount of grazing available depends on the variety and upon the severity of the winter. Heavy concentrations of sheep for a short period are preferable to lighter stocking over longer periods. Very wet country should not be grazed. It is false economy to keep over for chaff a paddock of greenfeed that has been badly puddled in the winter, as the resulting crop is nearly always poor, and the tilth of the land is frequently injured. Once grazing is finished a harrowing will break down the surface crust and spread droppings. Even on light country where the crop has not been grazed it is good practice to harrow to break

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The Modern Calf Food—every ounce standardised

down any crust formed over the winter.

For Chaff

Oats intended for chaff are cut earlier than those intended for grain. The crop is normally cut with the reaper and binder and left 10 to 14 days in the stook before stacking. Of recent years the header harvester has been introduced for harvesting grain oats. If headed direct the crop must be dead ripe, when there is every chance of loss through shaking. This danger may be overcome to some extent by mowing and harvesting with the pick-up attachment of the header about a week later.

BARLEY

As with wheat and oats, the greatest bulk of barley for grain is grown in the South Island. Most of the grain produced is used for malting, and the balance as stock feed. The most important barley-growing areas of the South Island are Marlborough and parts of Canterbury and Otago, where conditions suit this crop. In the North Island barley is grown for stock feed, and, with the absence of harvesting machinery in many districts the crop is usually stacked after harvest and fed out direct to the stock, with quite satisfactory results.

Growth Requirements

Barley has a shorter growing period than wheat and oats, and any area where there is a possibility of summer rains is unsuitable for the growing of high-quality malting barley, although feed barley can be successfully grown in most parts of New Zealand. At harvest time barley, which is harvested almost dead ripe, is liable to wind damage, and it is wise to select a reasonably well-sheltered paddock. Barley is a shallow-rooted plant and will not withstand wet and cold conditions as well as wheat or oats.

In growing barley for malting care should be taken to select a paddock where the soil is uniform in type, so that ripening will be even over the whole area. The best soil is a good medium loam, having a good lime content and with an adequate supply of moisture. On rich, heavy soils ripening is delayed and a poor-quality grain produced. Good malting barley has a low nitrogen content, and soils rich in nitrogen produce a nitrogen-rich grain.

Sowing

Because of the growth characteristics of the plant, and the fact that it cannot stand up to weed competition, the bulk of the barley crop is spring sown. At one time most of the barley was sown in the autumn, until the weed problem forced barley growers into spring sowing. At the present time autumn sowing takes place in parts of Otago and on lighter land where weeds are less of a problem. Recently maltsters have been encouraging the growing of autumn-sown crops, which produce a better-quality barley.

For autumn sowing barley may follow grass, although a previous crop of wheat is usually preferred. However, on lighter land barley after grass gives good results. Autumn-sown barley may also follow potatoes, wheat, or oats. The seed-bed should be firm and free from weeds, with a rubbly surface rather than one which is too fine. Unless sown after grass, one ploughing will suffice, while grassland should be cultivated in a manner similar to that required for wheat.

Varieties

The main varieties of malting barley grown are Chevallier, Plumage-Archer, and Spratt-Archér, while Goldthorpe-Spratt has a certain measure of popularity in Marlborough. For feed purposes Cape barley or Black Skinless are popular, these being too rich in nitrogen for malting purposes.

The rate of sowing for the autumn is 1½ to 2 bushels per acre, sown in April or early May through all coulters of the drill. The phosphate allocation of ¾cwt. per acre should be used.

In the spring, if the ground is at all caked, it often pays to harrow the crop, while a rolling will help to consolidate the ground after winter frosts. The harrowing will also check weed growth, but must not be too severe. It is a fairly common practice to sow a pasture mixture on the barley crop in the late spring, the degree of success being largely governed by the weather conditions and the density of the barley crop.

RUAPEHU ASH NOT TOXIC TO STOCK

By **I. J. CUNNINGHAM,** *Superintendent, Animal Research Station, Wallaceville.*

THE recent volcanic activity of Ruapehu resulted in the deposition of fine ash on pastures, so that grazing stock unavoidably consumed ash with their fodder. Many farmers became apprehensive that their stock might be poisoned, and enquiries about the toxicity of the ash were received at Wallaceville. There was no evidence from the field of any harmful effect on pastures or on stock, but it was felt desirable, nevertheless, to carry out some feeding trials on animals under close observation to determine whether the ash would produce any harmful effects.

THE amounts of ash which could be obtained at first were small, and it was necessary to work with rats, but sufficient ash was later available to carry out trials on a cow and a sheep.

Three groups of four rats each received different amounts of ash mixed in their rations. For the first group 5 per cent. by weight of the ration was Ruapehu ash; for the second group the proportion was 10 per cent., and for the third group 40 per cent. Measurements of food intake showed that group 1 rats consumed on the average 1 gram of ash daily, group 2 rats 2½ grams daily, and group 3 rats 12½ grams daily. The ash-containing food was fed continuously for five weeks, and during this time the rats remained in perfect health and grew at the normal rate. Ruapehu ash, therefore, was not harmful to rats.

One sheep and one cow were each drenched twice daily with a suspension of 30 grams, or slightly more than one ounce, of the ash in water. Administration at this rate was continued for 23 days. There was no adverse effect produced on the health of either animal or on the milk production of the cow.

The experiments outlined above may be of interest to those in areas where ash showers have fallen. The results, taken in conjunction with the absence of any losses in stock on affected country, indicate that no fears need be entertained that the ash is poisonous to animals.

Pedigree Sow Records

Contributed by the Livestock Division.

OF the 10 litters recorded during the six months June to December, 1945, there were 8 sufficiently good to be included in one of the five grades set out below:—

Grade	Litter Weight.	
	At 3 weeks.	At 8 weeks.
1	120 lb.	360 lb.
2	100 "	300 "
3	90 "	270 "
4	80 "	240 "
5	70 "	210 "

Breed Averages for the Period Under Review

Breed.	No. of Litters Recorded	Litter Weight at		Number of Pigs.		Average Weight at	
		3 weeks. (lb.)	8 weeks. (lb.)	Born.	Weaned.	3 weeks. (lb.)	8 weeks. (lb.)
Berkshire ..	7	111.1	333.1	10.3	7.9	14.15	42.40
Large White .	2	83	316.5	11.5	8.0	10.37	39.56

In connection with the grading of litters, a No. 3 grade is looked on as a good performance, No. 2 as excellent, and No. 1 as special.

THE following lists give the names and addresses of the owners, the herd book numbers of the boars and sows, together with the adjusted litter weights at three and eight weeks, the grade of the litter, and the number of pigs born and weaned.

Owner's Name and Address.	Herd Book No. of—		Litter Weight at		No. of Pigs.		Grade of Litter
	Sire.	Dam.	3 weeks. (lb.)	8 weeks. (lb.)	Born	Weaned	
Berkshire							
D. N. Petrie, Waikuku, R.D., Rangiora	19,462	19,443	94	278	13	7	3
Duncan McLean Ltd., Box 137, Greymouth	12,818	15,324	41	165	10	5	—
P. D. Cook, Matai, Ahaura	19,968	19,557	110	357	10	8	2
G. T. Cowan, Rotomanu, Westland	18,450	18,371	128	377	9	8	1
H. E. Hodgkinson, Rotomanu, Westland	18,295	18,278	136	406	11	10	1
J. Ryan, Rotomanu, Westland	19,872	18,455	113	379	9	9	2
F. N. Buckley, Waiterimu R.D., Ohinewai	19,327	19,814	118	370	10	8	2
Tamworth							
Pohangina Pig Club (T. J. Spelman, Secretary, R.M.D., Ashhurst)	13,305	13,166	62	233	13	6	—
Large White							
A. T. Richards, Barrytown, Greymouth	5,671	5,665	78	306	10	8	5
A. T. Richards, Barrytown, Greymouth	5,671	6,001	98	327	13	8	3

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is recognised as the most effective remedy for the treatment of worms in stock. NECAZINE is a Phenothiazine Worm Drench Powder which in quality, effectiveness, "wetting" ability and price is "SECOND TO NONE."

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AGRICULTURAL POLICY IN BRITAIN

Minister's Commons Statement

Mr. Thomas Williams, United Kingdom Minister of Agriculture.

THE agricultural policy of the United Kingdom Government was outlined to members of the House of Commons by the British Minister of Agriculture, Mr. Thomas Williams, on November 15, 1945. British agriculture was tremendously revitalised and expanded during the war, and the extent to which this effort will be continued is embodied in Mr. Williams's statement, which should be of particular interest to farmers of this country.

"I AM now able to indicate in broad outline the general principles on which the Government's agricultural policy will be based," the British Hansard report quotes Mr. Williams. "As stated in the Gracious Speech, the Government will develop to the fullest possible extent the home production of good food, with due regard to the recommendations of the Conference on Food and Agriculture at Hot Springs. The objective will be to promote a healthy and efficient agriculture capable of producing that part of the nation's food which is required from home sources at the lowest price consistent with the provision of adequate remuneration and decent living conditions for farmers and workers, with a reasonable return on capital invested.

Assured Markets and Prices

"To this end the Government propose to establish as an essential and permanent feature of their policy for food and agriculture a system of assured markets and guaranteed prices for the principal agricultural products, namely, milk, fat livestock, eggs, cereals, potatoes, and sugar beet.

"The annual price reviews instituted in February, 1945, will be continued, together with the provision for special reviews in exceptional circumstances. After these reviews, prices for cereals, potatoes, and sugar beet will be fixed by the Government 18 months ahead of the harvest. The existing system of fixing prices for fat livestock, milk, and eggs will be developed to cover the period after June, 1948, when the existing guarantees would otherwise cease to operate. These branches of food production entail advance breeding and other commitments for the farmer, and, in order to give the necessary continuous assurance of reasonable stability of prices, the Government propose to institute a new system of overlapping four-year periods with biennial reviews.

"For example, in February, 1946, minimum price levels will be considered and fixed for the two-year period ending June, 1950, and in 1948 for the period July, 1950, to June, 1952. These minimum price levels will apply to milk, fat cattle, and fat sheep, for which guaranteed minimum prices have already been announced until June, 1948, and to fat pigs and eggs. Actual prices for all these products will continue to be fixed in advance for 12-monthly periods after each successive February review.

"All prices, minimum and actual, will be fixed with due regard to the need for the greatest possible efficiency and economy in methous of production," Mr. Williams continued. "Account will also be taken of any modifications in the character of the agricultural output which may be necessary to meet changing national requirements. If it should become necessary to apply a quantitative limitation to any section of the assured home market, this would be announced 18 months before the harvest in the case of crops—that is, after a February review—and at least two years in advance in the case of fat livestock, milk, and eggs after a biennial review.

"Thus, farmers will always know the prices for cereals, potatoes, and sugar beet well before the time comes for sowing those crops. For fat livestock, milk, and eggs they will know minimum prices three or four years in advance, and actual prices some three to fifteen months in advance. In all cases they will be given ample notice of any quantitative limitation which may be imposed on the assured market.

"The actual method of affording to the farmer an assured market and a guaranteed price will be worked out for each commodity with due regard to the system to be adopted by the Government for the procurement, distribution, and sale of all those foods—home-produced and imported—which play an important part in the nation's diet. The Minister of Food has already announced that detailed plans will be worked out by the Government, in consultation with the interests concerned, to give effect to this policy. Methods other than that of direct Government purchase, for example, the deficiency payment system of the Wheat Act, will not be excluded.

To Promote Efficient Farming

"Legislation will be required to amend the statutory provisions with regard to wages regulation in the light of the wartime experience of central wage-fixing machinery. As a corollary to the provision of this substantial measure of security of markets and stability of prices, the Government propose to take appropriate steps to ensure that agricultural land is not only properly farmed but properly managed and equipped, and to promote improved efficiency in the production, marketing, and distribution of home food products. Free technical advice will be made available to agriculturists to improve their farming efficiency. In order to deal effectively with the minority of farmers and land owners who fail in the responsibilities attaching to the occupation and ownership of land, the Government propose to seek powers in permanent legislation to exercise certain necessary measures of control. Such farmers and land owners will be subject to a period of supervision during which compulsory directions may be served, and in the last resort will be dispossessed if, after a reasonable period, it becomes evident that they are unable or unwilling to improve. There will, however, be a right to make representations to an independent tribunal before a tenancy is terminated by the Minister, or an owner-occupier or land owner dispossessed.

Some Public Ownership

"Systems of marketing and distribution will come under review as part of the detailed investigation announced by the Minister of Food, to which reference has already been made.

"Powers will be sought to enable the Agricultural Ministers to acquire land by voluntary negotiation, or compulsorily in cases of dispossession or where public ownership is the only means of securing the full productive use of the land. The Government propose to set up a commission for the purpose of managing and developing for agricultural use land acquired under these powers in England and Wales. Local bodies will be required to assist in the execution of this policy and to provide the industry with local leadership and guidance.

National Advisory Service

"In England and Wales county committees similar to the County War Agricultural Executive Committees will be constituted on a permanent basis. Their primary duty will be to promote efficiency, working for this purpose in close association with the National Advisory Service which it is intended to establish in England and Wales on October 1, 1946. They will act as the local agents of the Minister in the exercise of the proposed powers of control, and undertake certain executive services. They will also be responsible for the schemes already in existence for the training of ex-servicemen as skilled agricultural workers.

"It is proposed," said Mr. Williams, "that these committees should continue to be appointed by the Minister, but that they should be reconstituted to consist in part of persons selected by the Minister from lists of names submitted by the different sections of the agricultural industry, and in part of a smaller number of persons selected by the Minister from other sources. It is hoped that the experience of many of those who have rendered such valuable service during the war will continue to be available under the new constitution. Members of the staff of the English and Welsh committees who possess the appropriate qualifications will have an opportunity to enter the National Advisory Service. The services of others, including many of the non-technical staff, will be required in the continuing local organisation that will be preserved by these committees. Somewhat different forms of local organisation will probably be found desirable in Scotland and Northern Ireland.

Food Shortage and Controls

"The world food shortage is extremely serious. For the time being, therefore, compulsory directions to grow sugar beet and potatoes must be served, and supervision exercised where necessary over the laying down of grass, so that this process keeps in step with the anticipated increase in livestock, with the requirements of home-grown feeding stuffs, and with the continued need for a large tillage acreage.

"As the world shortage of food passes, the Government intends to leave farmers normally to grow the crops which their experience, supplemented by guidance from the Advisory Services, indicates are most suited to their own land. They intend, however, to seek permanent powers to serve compulsory directions on any farmer whenever necessary in the national interest, but these powers will normally be used only in exercising control over farms under supervision or to supplement the methods of steering production already described, should an overriding need in national food supplies or national diet render this necessary.

"The controls exercised over the distribution of fertilisers, feeding stuffs, machinery, and other farm material will be lifted or modified when supplies are sufficient to ensure free and equitable distribution.

"This outline of the Government's plans for a gradual transition from the organisation and methods necessary to promote maximum food production in wartime to a permanent policy appropriate to more stable conditions will need to be worked out in detail with a view to the submission of legislative proposals to Parliament," the statement concludes. "This will be done in full consultation with the organisations representative of land owners, farmers, and workers. The Government hope that, with this assurance of their intentions, all sections of the industry will attack their immediate tasks with enthusiasm and confidence."

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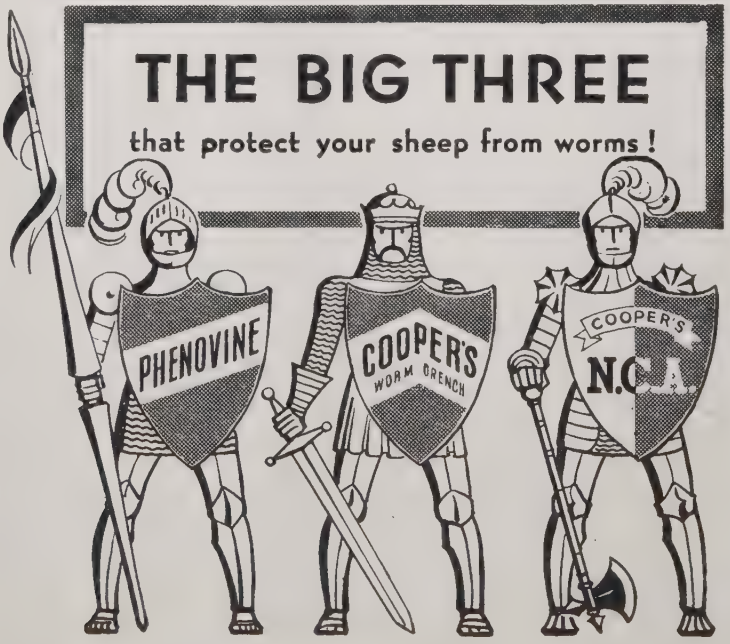

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Picking and Handling the Lemon Crop

By P. EVERETT, *Orchard Instructor, Kaikohe.*

BECAUSE the percentage of green lemons is generally higher now than at any other time of the year great care is necessary in selecting fruit for picking.

FRUITS of a dark-green colour, even though they may be up to 2¼in. in diameter, in most cases are best left for the next monthly picking. Coarse, rough lemons of a dark-green colour, if left on the trees, may improve before reaching peel size; even if improvement is not sufficient to justify their inclusion in the commercial grade, a good percentage of these fruits will qualify for "peel" grade, thereby reducing the amount of fruit for "juice" grade.

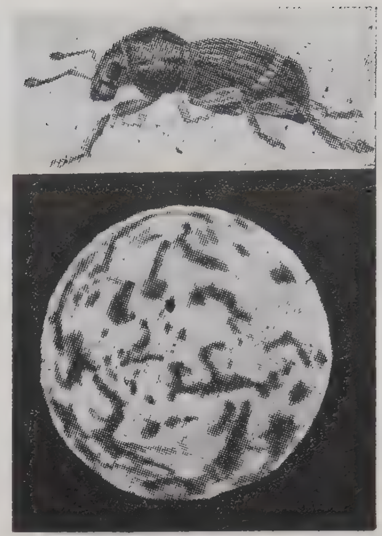
In orchards where it is necessary to pick dark-green fruit because of the higher percentage produced by the vigour of the trees, it is sound practice to use a guide ring slightly larger than 2¼in. to provide for the greater shrinkage natural in this fruit.

Lemons which have become yellow should be picked, even though the size may be under 2¼in., as by the next picking date this fruit may have become tree-ripe and fit only for "juice" grade. This will relieve the burden of the tree and increase the size of the later-maturing fruit.

Care in Handling

The oil cells of the rind of new-season lemons are more tender than those of older fruits and the skin coverings are less pliable. Special care, therefore, should be exercised at this time to avoid injury from rough treatment. Slight bruises and scratches readily injure the surface tissue and enable fruit-rotting fungi to gain entrance. This danger is most pronounced with fruit harvested just after a rainy period when the tissues of the lemon are in a particularly turgid condition.

Injuries may be reduced to a minimum by keeping field boxes and picking bags free from dirt and twigs, and avoiding over-filling picking bags—a common cause of injury to fruit, especially when a ladder is used.



A second brood of Dicky-rice weevil regularly reaches adult stage during April and may cause extensive damage to fruit at fruit-set stage, the scars enlarging as the fruit develops.

Moreover, the skins of the fruit should be allowed to toughen slightly before transport by letting the fruit stand at least 24 hours after picking.

Dicky-rice Weevil

During March there will have been little or no damage to the fruit or foliage by Dicky-rice weevil, as the first brood of this pest ceases to be troublesome about the end of February. However, regularly there is a second brood which reaches the adult stage during April, or later, and is capable of inflicting extensive damage

[*Sparrow Industrial Pictures photo.*

Injuries to new-season lemons may be minimised by avoiding over-filling of picking bags.

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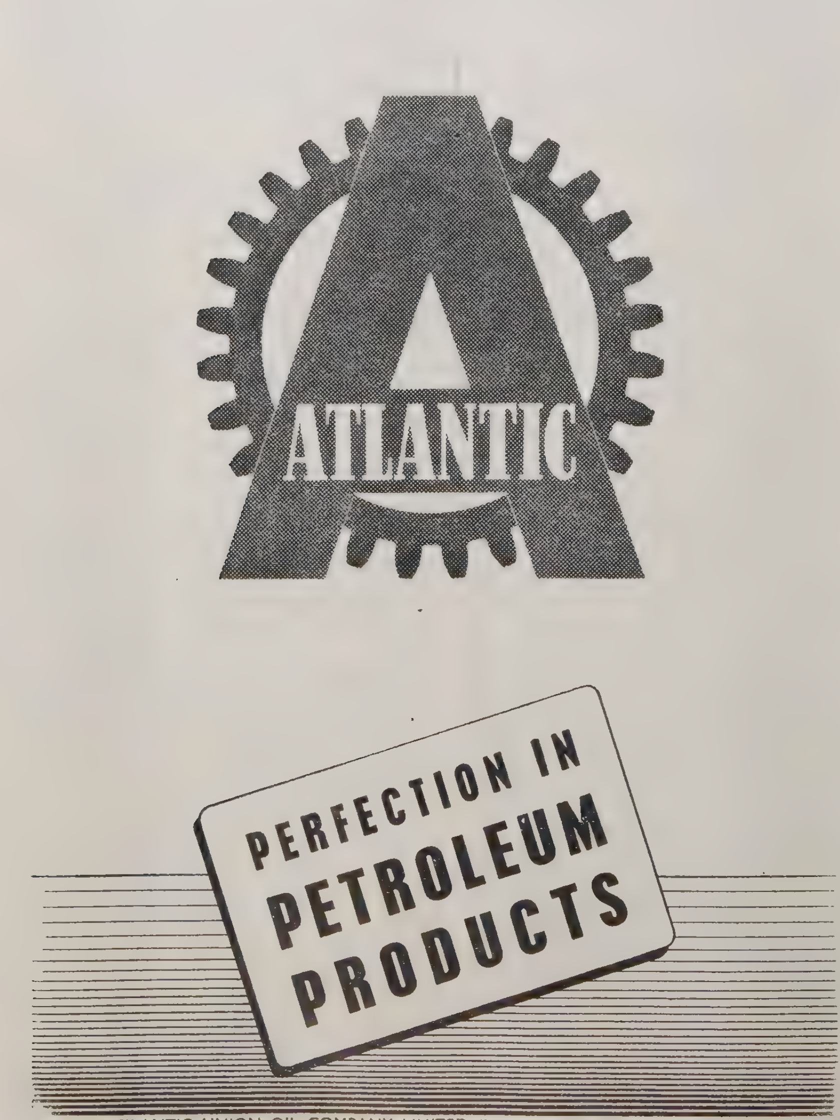
for a long time unless effective control measures are taken. This brood, which reaches its peak in the middle of June, may continue until as late as October.

Main injury to fruit occurs immediately after the fruit-set stage of development and the scars gradually enlarge as the fruit grows. The second brood of the weevils, therefore, is far more injurious to lemons with their autumn-blossoming habit than to other kinds of citrus.

In infected orchards, protection should be afforded by applying bands of tangle-foot material to tree trunks early in April. Care should be taken to keep the branches of the trees from coming into contact with the ground or any weeds. Trees banded in the spring probably will require further tangle-foot to remain effective throughout the winter.

Pruning

After the summer drought it is anticipated that in some orchards there will be extensive die-back of twigs and small branches which will need to be removed. With severe tree debilitation extensive cutting-back of weakened branches may be necessary. Pruning (other than the removal of dead twigs) should be delayed until there has been appreciable new growth which will indicate the extent of the pruning necessary. Where extensive pruning is needed, it is preferable to delay the operation until growth starts in the spring.



ATLANTIC UNION OIL COMPANY LIMITED (Incorporated in New South Wales)

Answer to Correspondent

Staggers in Dairy Herd

"R.B.," Mangaoranga:—

I have had a number of cases of "staggers" in my herd this season and have got most of them right by injections of salts and calcium. My worst cases were very feverish, with a rapid loss of condition. I lost four, all of the type just mentioned. I would like advice on one cow which appears to have recurrent staggers. As long as I give her two or three pounds of molasses a day she is all right, but if I miss she has another attack; a couple of bottles of molasses and she is right in half an hour. The cow is in poor condition now, though fat at first. She still grazes and chews her cud occasionally and has quite a drop of milk. She is a heavy producer—400lb. fat last season.

LIVESTOCK DIVISION:—

The cow you mention would appear to be suffering from a condition known as acetonemia. The administration of molasses is the most practical line of treatment that can be suggested, and you should continue giving two or three pounds of molasses daily. The cow should be kept in a paddock where there is plenty of feed. If you have an orchard available, you could put the cow in to graze there.

Subscriptions to the "Journal of Agriculture" (2/6 a year) may be paid at any office of the Dept. of Agriculture or to the Publisher, Box 3004, Wellington.

REGISTRATION OF

DAIRY FACTORY MANAGERS

Intending applicants are hereby notified that applications for registration under the Dairy Factory Managers' Regulations should reach the Registrar, Dairy Factory Managers' Registration Board, c/o Department of Agriculture, P.O. Box 3004, Wellington, on or before 1st May, 1946. Forms are available from the Registrar.

Attention is drawn to the fact that under the Regulations, any application which is received by the Board after the 1st May, shall not, except in special circumstances, be considered by the Board until after 1st May, 1947.

H. G. PHILPOTT, Registrar.

N.B.—*This notice refers to persons who are NOT AT PRESENT HOLDERS OF CERTIFICATES. Notice of renewal and renewal form will be posted to every registered manager by the Registrar.*

Maize Growing for Grain

By C. WALKER, *Instructor in Agriculture, Thames.*

DESPITE the fact that because of climatic conditions there is only a limited area of New Zealand where maize can be grown for grain, the demand for maize for stock food is so important that every endeavour should be made to have the acreage of this crop increased. If this could be achieved, it would not only make the Dominion self-supporting in maize and thus avoid the necessity at times of importing this grain, but would make unnecessary the importations previously needed each year of such large quantities of wheat, barley, etc.

NEW Zealand could profitably utilise each year the maize produced from 12,000 to 15,000 acres, and the following table showing the acreage grown over the last 25 years shows that in most years production has fallen far short of requirements:—

	Acres.
1920	11,514
21	10,522
22	9,732
23	8,208
24	8,621
25	8,508
26	10,249
27	10,291
28	8,986
29	7,957
30	7,168
31	5,965
1932	8,153
33	8,256
34	7,946
35	7,517
36	6,679
37	6,147
38	6,025
39	7,962
40	10,763
41	8,779
42	7,291
43	5,691
44	8,473

In the Bay of Plenty and the Gisborne district, and to a smaller extent in North Auckland, Auckland, and Hawke's Bay, maize can be grown successfully and is quite a payable crop whether the grain is fed to stock on the farm where it is produced or marketed. In recent years the revenue from pastures in the form of lamb, wool, and meat generally, and from the production of small seeds, together with the difficulty of obtaining efficient labour, has had an effect on the acreage of maize grown, but in the levelling out process of post-war years maize growing is expected to occupy the position its importance warrants, with the acreage back to about 10,000 acres a year. If this acreage can be maintained, with the better yields antici-

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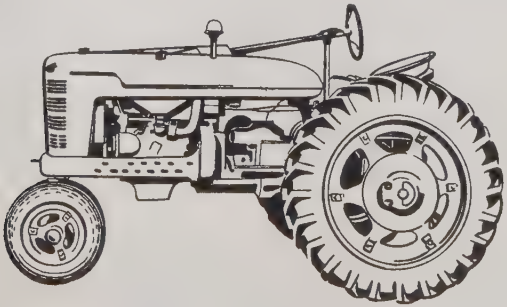

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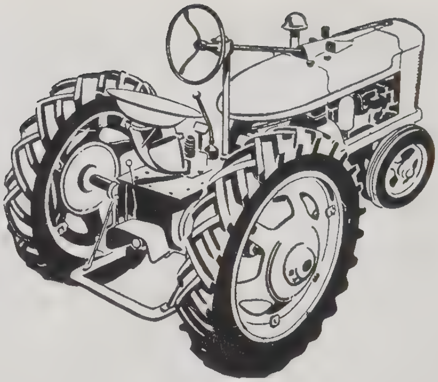
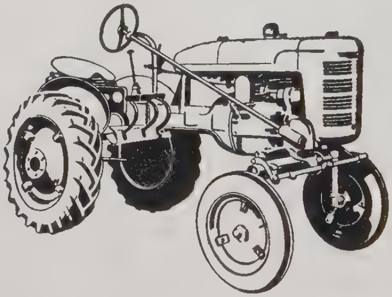


The H. The three-furrow job with four working and a 15 m.p.h. speed. It has replaceable cylinder sleeves, variable governor control, and a host of other important features.



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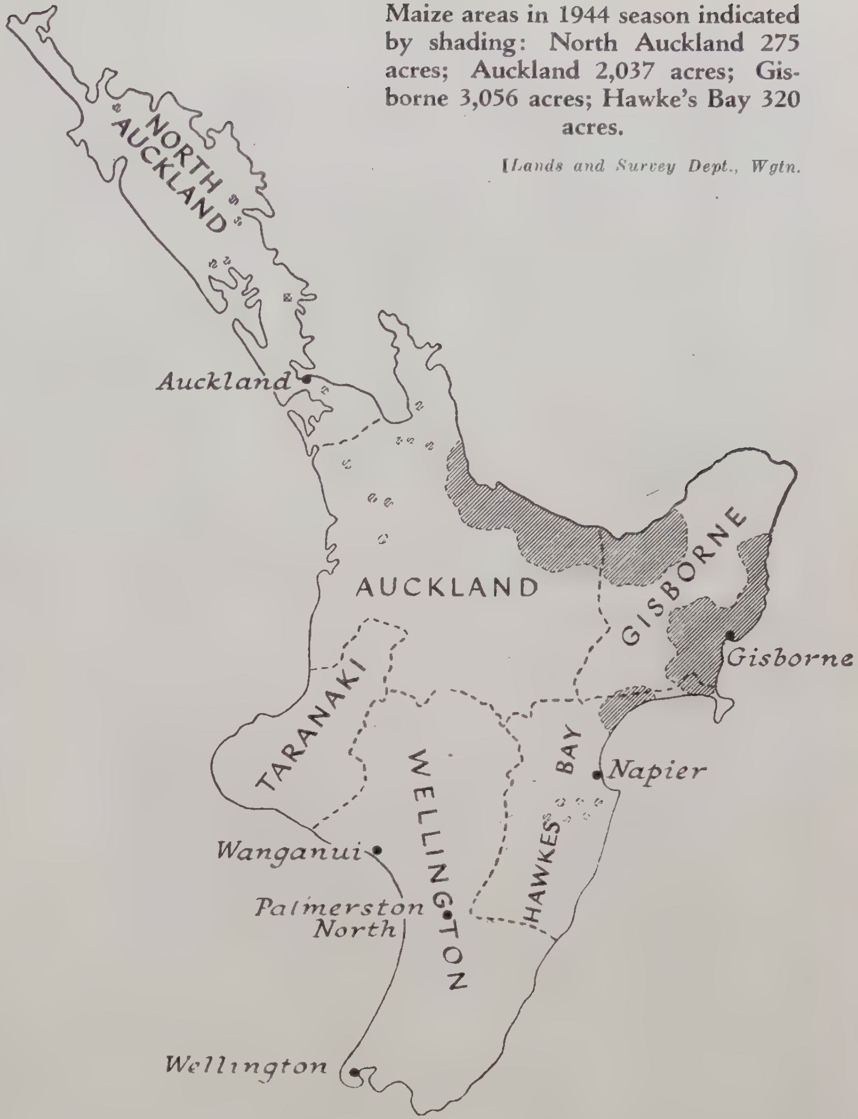
pated from new varieties and hybrids, the maize crop may yet play its real role in the country's agricultural economy.



Maize areas in 1944 season indicated by shading: North Auckland 275 acres; Auckland 2,037 acres; Gisborne 3,056 acres; Hawke's Bay 320 acres.

[*Lands and Survey Dept., Wgtn.*

Place in Rotation

In the early days of land development, particularly where the object was to bring country into production for dairying, maize was used as the pioneer crop after drainage, clearing, and fencing had been completed. Many of these areas were previously in swamp vegetation, and they needed considerable surface levelling before they could be grassed satisfactorily. It was found that the cultivation incidental to the growing of two or three crops of maize in succession did much towards bringing the surface to a level state, and that such land was very highly productive when cropped with maize, so that the growing of this crop in the initial stages of land development served a twofold purpose.

Later, however, with the grassing of this country, and the complete development to high-grade dairying pastures, any further maize growing necessitated the breaking up of grassland and cropping to some prearranged plan. Actually, most of the maize-growing land is highly-developed grassland upon which any extensive systems of cropping are really unnecessary, and it is therefore not unusual to find land broken out of grass and cropped with maize for one, two, or three years, after which it is again sown in permanent pasture. The number of crops taken depends generally on the fertility of the soil. Rich river flats will stand three or more crops quite well, but lighter soils should not be subjected to more than one or two crops.

Where other crops, such as swedes or pumpkins, are desired, they should be taken immediately after grass. The land could then be cropped with maize for one or two years and then resown in permanent pastures. Roots or pumpkins immediately following grass will have reduced competition from weeds, while maize crops following them will be able to outgrow subsequent weed development. In most maize districts summer weeds can be a serious problem to second and third crops—serious enough, in fact, utterly to choke out low-growing crops such as roots and pumpkins.

Selection of Areas

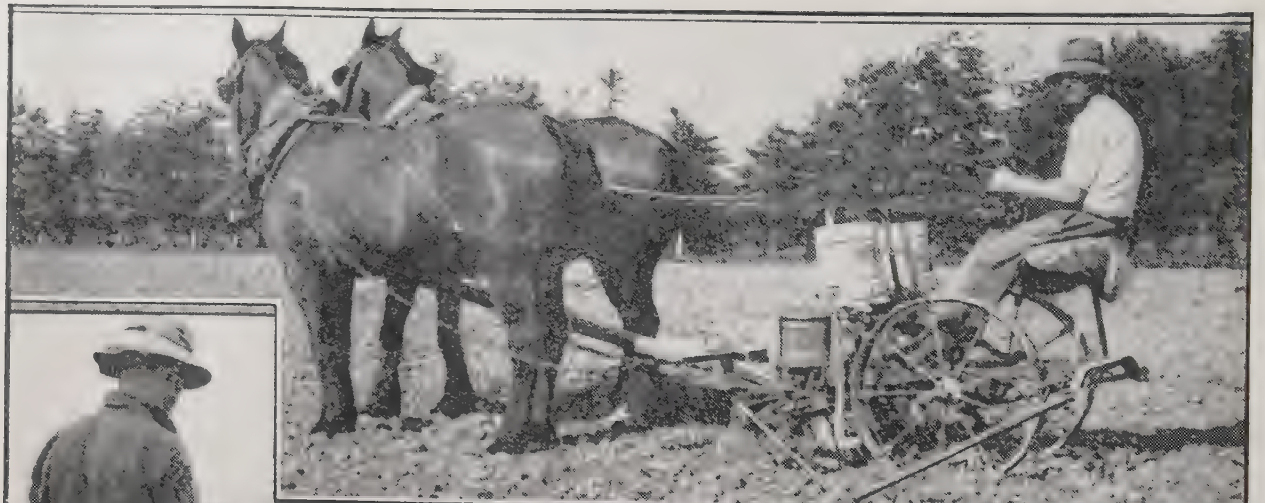
As the maize crop is a heavy feeder it is essential to select for cropping areas that have a fairly high degree of fertility. Run-out fields or naturally poor lands are not likely to prove of any value, nor can they be made suitable by heavy topdressing. In general, a good rich piece of land such as an old night paddock should be chosen for the crop. Good, well-drained swamp, even if just out of the virgin state, will grow quite useful crops; and river flats are almost invariably suitable for maize cropping.

Apart from these observations, maize will generally do quite well on soils that carry good pasture, but it is essential to select only fairly frost-free areas, with the period between early October and mid-May practically free from frosts. Maize will not tolerate even light frosts either at the commencement of growth, when young plants will be cut right back, or late in the season, when grain will be destroyed. Winter frosts have no ill effect upon the mature grain; in fact, growers consider several winter frosts aid in harvesting the crop.

Provided soil fertility is good and climatic conditions are satisfactory, further factors affecting the prospects of the crop are the degree of shelter provided from heavy winds, the aspect of the land, and the degree of land drainage provided. Maize does best where all these conditions are most favourable, so that every endeavour should be made to comply with the conditions that are most desirable.

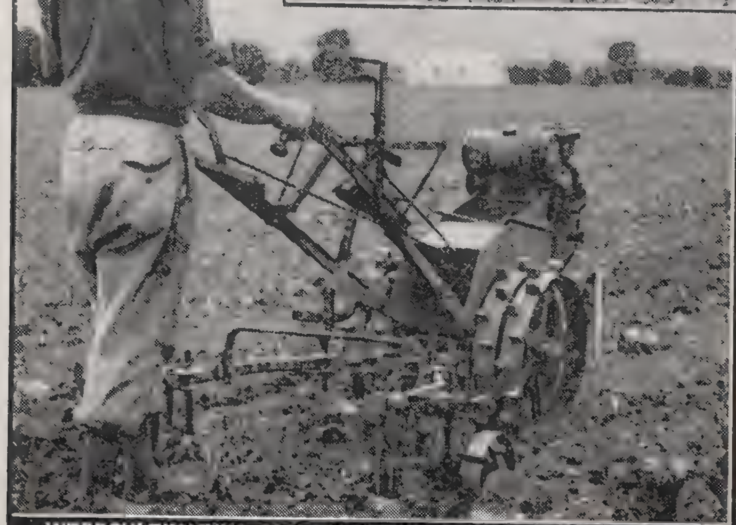
Preparation of Seed-bed

In preparing for maize one should aim at providing the best possible conditions of tilth by the time the seed is to be sown. This entails thoroughness in every operation of cultivation. Thoroughness, in its turn, calls not only for efficiency in the actual performance of ploughing, discing, harrowing, etc., but also for the provision of ample time for each phase of cultivation to play its part to the fullest extent. Ploughing is frequently delayed until a week or two before sowing, which forces the grower to carry out all operations hurriedly; but, despite the energy he may put

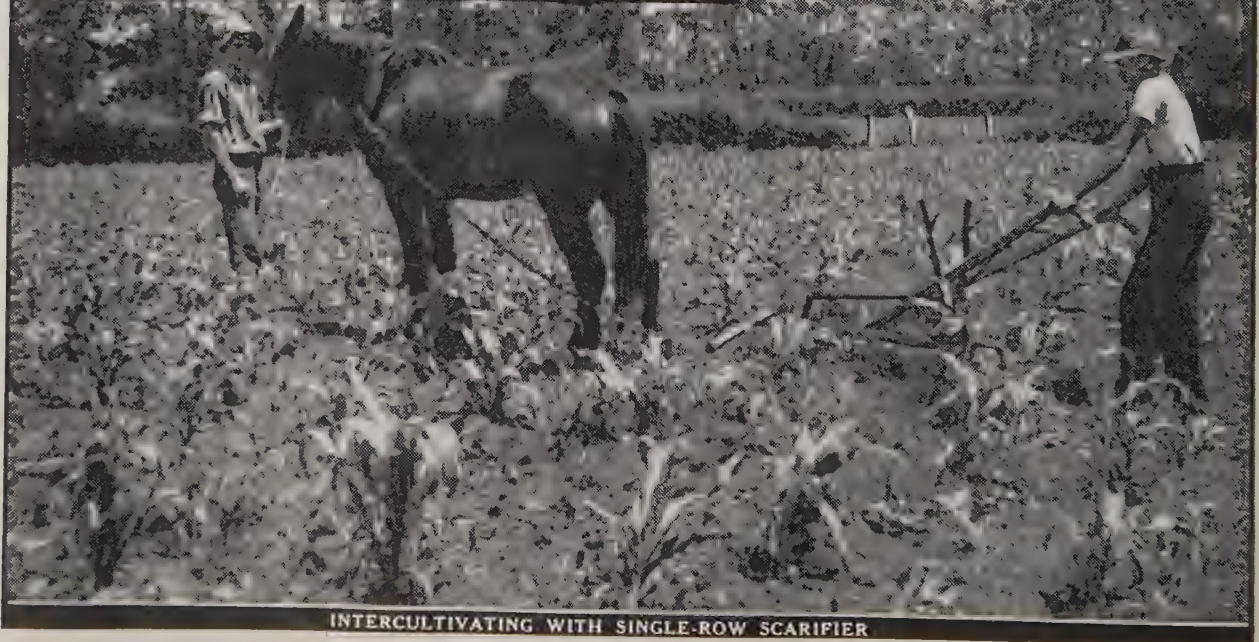


SOWING WITH A 2-ROW PLANTER

THE SOWING AND CULTIVATION OF THE MAIZE CROP



INTERCULTIVATING DUAL CROP WITH SMALL POWER PLANT



INTERCULTIVATING WITH SINGLE-ROW SCARIFIER

PREPARING THE SEED-BED

Thorough preparation of the seed-bed should be planned well ahead.

into the work at this late hour, he cannot bring to the land the same degree of efficiency that better-planned work would do.

The selected area should be ploughed before winter so that exposure to winter rains and frosts will assist in breaking down the turf, pulverising the soil, and destroying harmful pests that may be harboured in the soil. If, for any reason, pre-winter ploughing cannot be performed, it should be carried out as early as possible in the spring. Skim ploughing is quite satisfactory as the initial ploughing, but it should be followed in the early spring with a deep ploughing to 6 or 7in. Further cultivation should consist of thorough discing, harrowing, and rolling to produce a fine and firm seed-bed at least two weeks before the sowing of seed. If time permits, a further ploughing at this stage with subsequent light discing and harrowing will ensure increased returns. However, where the acreages are extensive this may not always be practicable.

In general, well-planned cultivation, spread over several months, will produce good results, but hurried cultivation is always likely to lead to disappointment. No amount of cultivation after the crop is sown can make up for any deficiencies in the preparatory work.

Time of Sowing

Irrespective of district, the time to sow is governed by the weather. If frosts are still likely to occur, maize should not be sown, as it will not stand even light attacks. In general, the main maize districts are reasonably free from frosts after mid-October, which is regarded as the usual period for first sowings. Apart from early-maturing varieties like Early Butler, all areas should be sown by mid-November. With Early Butler and similar varieties good crops may be obtained with later sowings up to the first week in December. Thus, where late frosts are likely, this variety has advantages that are not possessed by the main late-maturing strains.

Rate of Sowing

Throughout the maize districts the rate of seeding varies between limits of 12 and 16lb. per acre, with the majority of areas using about 14lb. Variation within the above limits is due either to the spacing of rows, the method of sowing, or the size of the seed used. Some varieties such as Hickory King with very large grain require a greater weight of seed than very small-grained types like Funk's Yellow Dent.

Method of Sowing

The system generally adopted in sowing is to drill the seed in rows varying from 30in. to 36in. apart with the grain spaced at 9 to 10in. apart in the rows. For such sowing either a special two-row maize seeder, which sows both seed and fertiliser, may be used, or an ordinary grain drill suitably adapted can be employed. With the latter two or three rows may be sown at a time.

Where small areas are to be sown, and where weeds are likely to be a serious problem, a system of sowing "on the square" has much to commend it. After the preparation of the area for sowing a sledge provided with three runners spaced 3ft. apart is drawn across the field to mark it in a series of parallel lines from one side to the other, and another series of parallel lines drawn at right angles to the first. With the field thus divided

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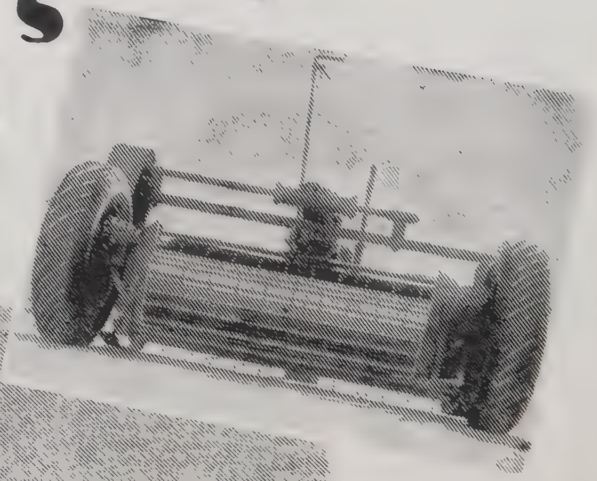

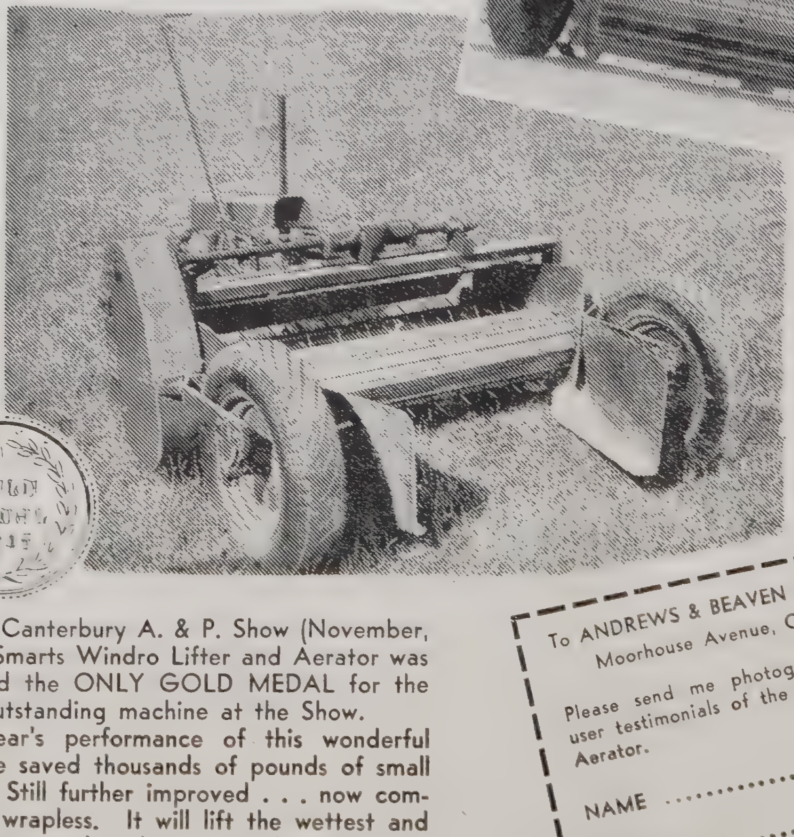

1 The rear end showing the Draper type lifting attachment.

2 A general view showing its all-steel constuction and the Windro width control.

At the Canterbury A. & P. Show (November, 1945), Smarts Windro Lifter and Aerator was awarded the ONLY GOLD MEDAL for the most outstanding machine at the Show.

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into squares, seed is dibbled in at each intersection of lines. Three or four seeds should be sown to be later thinned to two or three. For dibbling in seed either a spade or a special dibbler which will drop three or four seeds in each hole may be used.

A check system of sowing is adopted in the Gisborne district, where the maize planter travels along wires stretched from end to end of the field being sown. Checks spaced about 34in. apart on these wires trip the machine and allow two or three kernels of maize to be dropped at each spacing. This method, as with the Tauranga system of sowing "on the square," provides for spacing both ways, so that subsequent intercultivation can be carried out in two directions, which is of great assistance where weeds are troublesome.

Dual Cropping

Under most circumstances the growing of more than one crop at a time on a piece of land is not regarded as good practice. However, maize can be grown in association with cattle marrows or kumikumis without either crop suffering any ill effects. In fact, if one fails for any reason the other seems to make up for that deficiency by doing just a little better than usual. The general practice is to mix kumikumi seed with seed maize so that about 2lb. of the former is sown on each acre. By this means some kumikumi plants establish in every row. Disadvantages of this practice are that it is better to have the maize plants actually established before the kumikumis appear, and, with kumikumis in every row, it is difficult to give sufficient intercultivation to the maize crop to control weed growth efficiently.

An improvement upon this practice would be to sow the maize separately, and, about two weeks later, when the maize is through, to dibble the kumikumi seed into every fourth row, which would give better conditions for the young maize as well as providing a longer period for intercultivation.

In the winter, when the maize cobs have been harvested, dairy cattle and pigs can be turned in to the area. The dairy cattle will consume the dry stalks and some of the kumikumis, while the pigs will do well on any discarded maize cobs or kumikumis. There is no necessity to feed off in breaks, but it is advisable to break open a ration of kumikumis each day, which can be done quite quickly with a spade.

Dual cropping: maize and kumikumis ready for feeding off.

Varieties

Maize varieties intermix readily, and as many varieties are grown in restricted localities, new varieties soon become lost as individual types. Salient characteristics such as colour and size of grain, season of maturity, and resistance to disease and climatic conditions become modified or superseded by other characteristics that are not always desirable. Nevertheless, despite these influences acting against maintenance of pure varieties and strains, there are still quite a number of reasonably pure varieties which have come to be regarded as dominant varieties of certain districts. Thus on the Gisborne flats the main varieties grown and the order of their popularity are: Gisborne Horsetooth, Pfister, Marigold, Silver Queen, Leamington's Cross, and a small acreage of Early Butler. In the Bay of Plenty other varieties are favoured, Opotiki growers concentrating on Horsetooth and Early Butler; Whakatane growers favouring Excelsior, Early Butler, and Horsetooth; while Tauranga growers show preference for Large Yellow Dent. Of less importance throughout all maize districts are such varieties as Hickory King, which is mainly a greenfeed type, and Flint strains, which are grown in relatively small acreages.

Brief descriptions of each variety are as follows:—

Marigold:

A fairly tall-growing type, rather light in the stem, and producing a fair amount of leafage, this variety is a main crop type, taking seven months to mature. Grain is bright amber in colour, fairly small, and flinty. Cobs are long and slender, there being a tendency to form more than one cob per stem. Being light in the stalk, the variety is likely to lodge badly if exposed to winds, but even so the flinty grain lasts well and does not rot freely. The variety is popular in the Gisborne district and is becoming increasingly so at Whakatane. Grain is very suitable for all livestock, particularly for poultry.

Prairie Queen:

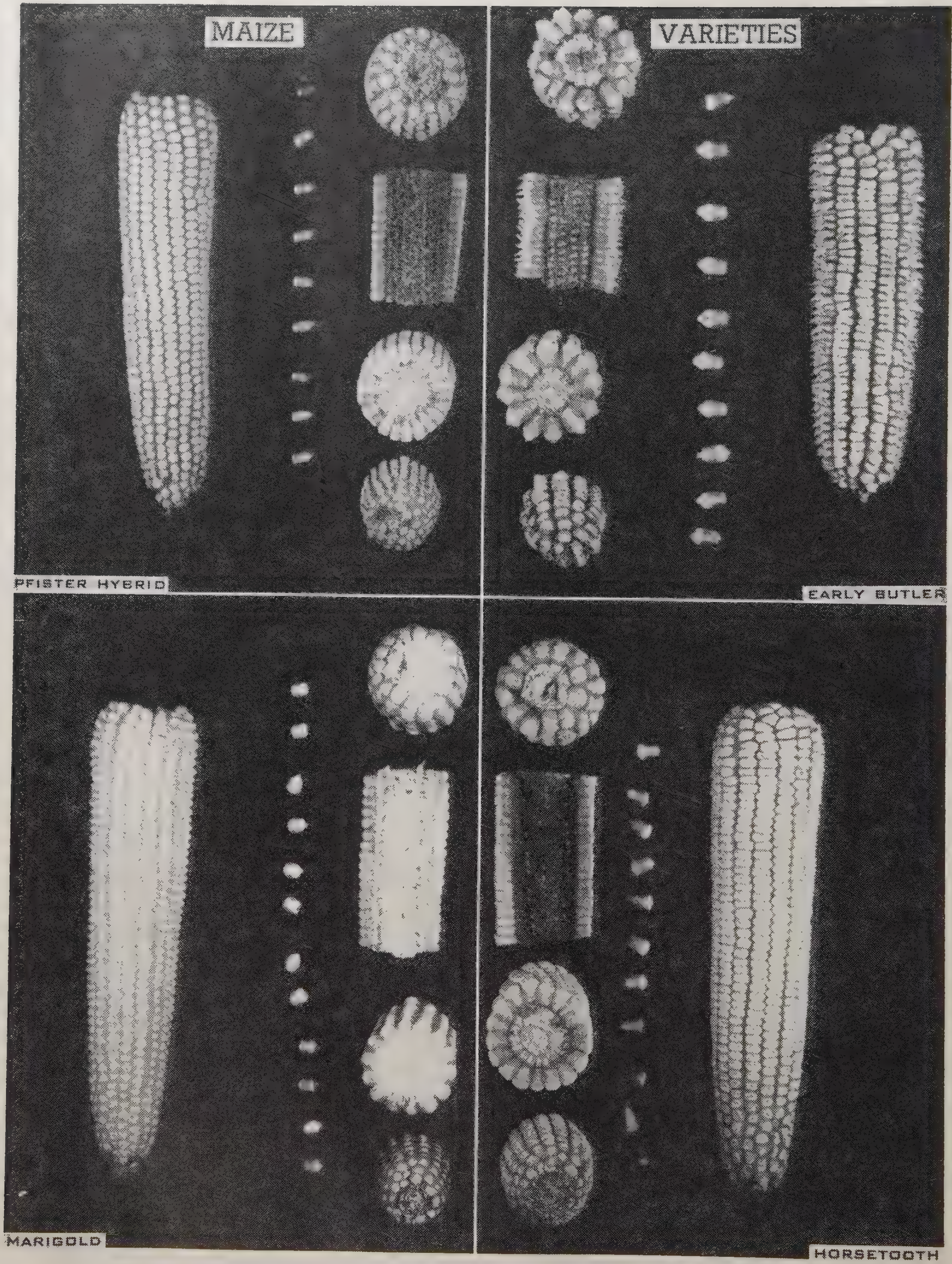
This variety was commonly grown on the Gisborne Flats, but has become crossed so that at present there are few true strains. The plants are shorter than Marigold and a little sturdier. Grain is fairly deep with a roughened dent. The crop takes about six months to reach maturity.

Funk's Yellow Dent:

At present this variety is not well known, but is occasionally grown in districts where the growing season is very short. Plants are short and light in the stem. Cobs are short and fine, but are closely packed with shotty grain. Maturity is reached within 4½ months, and the small grain is very popular with poultry farmers.

Hickory King:

A tall-growing variety possessing stout stems and a high leaf development, features which make it very suitable for greenfeed. Cobs are of medium size with very large white grain. Whereas most varieties have 14 to 18 rows or more of grain, true Hickory King never has more than 8 rows. Maturity is reached in six months.


MAIZE
VARIETIES
PFISTER HYBRID
EARLY BUTLER
MARIGOLD
HORSETOOTH

Flint Types:

Among Flint types are such strains as "Motiti" maize. The stems are usually short and light, and there is generally a tendency to sucker freely. Maturity is reached very early in the season, while the grain is usually very hard. Yields are generally light, so that they cannot be recommended in preference to other varieties previously described. "Ninety Day" is a flint type which has practically lost its identity through crossing with other strains, and at present it is almost unknown as a true line.

Horsetooth:

A moderately tall-growing variety with fairly sturdy stems and a good supply of leafage. Plants frequently show a tendency to sucker. Cobs are usually large, the deep yellow grain having a roughened dent. Maturity is reached in six to seven months. The crop stands well, but when lodged the grain soon sprouts.

Early Butler:

Of the common varieties Early Butler is by far the earliest maturing and is also a good yielding type. Stems are of moderate height but fairly light, so that lodging is often a serious weakness. Cobs are of moderate size with very deep yellow grain. The dent on the grain is drawn out into a distinct beak which is a varietal characteristic and one that causes the mature cob to feel exceedingly rough, a feature which is unpopular with harvesters, who generally demand a higher rate for handling crops of this variety. The grain is very soft and will rot quickly once the crop lodges. Maturity is reached in 4½ to 5 months.

Excelsior:

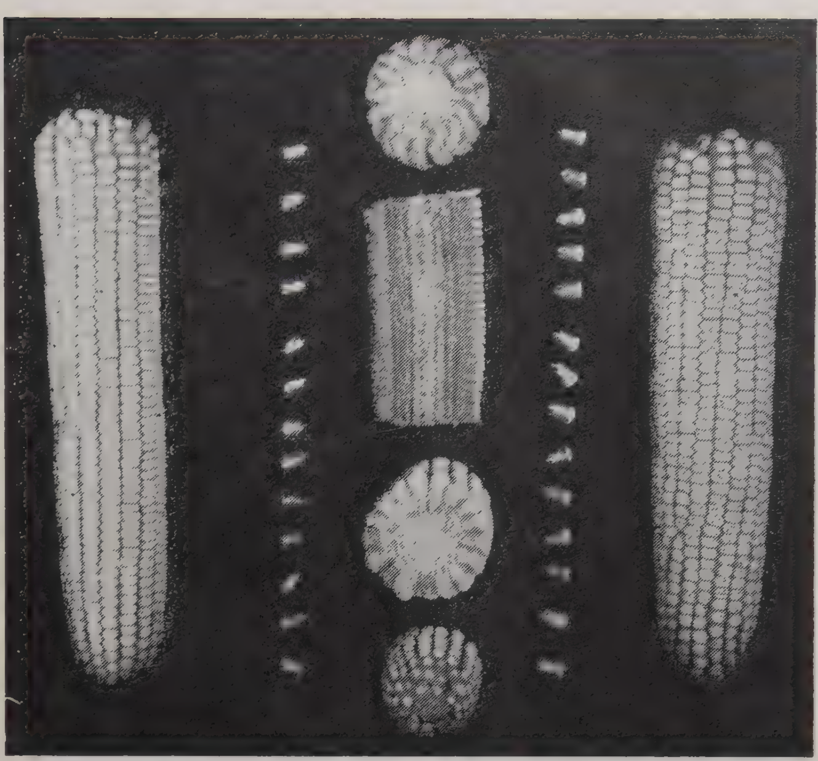
A tall-growing variety with stout stems that stand well. Leaf development is good. Cobs are usually large and weighty with a good supply of even, yellow grain with fairly smooth dents. The grain is of medium size, suitable for all kinds of livestock. This variety has received more attention in selection for improvement than others, and possesses a high degree of uniformity at present. Maturity is reached in six to seven months.

Large Yellow Dent:

Very tall-growing type with stout stems and abundant leafage. It stands quite well even under moderate wind. The cobs are long and thick. Grain is of medium depth, yellow, and smooth dented. Maturity is reached in six to seven months.

Silver Queen:

This variety is extensively grown in the Poverty Bay district. It is of medium height with fairly good stems and leaf development. Cobs are above medium size, and densely packed with deep grain with a white cap. The dent is somewhat rough. Maturity is reached in about six months.



Silver Queen.

Pfister Hybrid:

A comparatively new introduction to the Gisborne district, this strain has proved very popular as a high-producing line. The stems are rather below average in height, reasonably strong, and leafage development is quite good. Cobs are set fairly low on the stalks. The cobs are only medium in length and fairly fine, but very well packed with shotty grain with a smooth yellow dent. Cobs are definitely weighty for size, and shell out very well. The size of grain makes the variety popular with poultry farmers. Maturity is reached in five to six months. This variety shows a very marked tendency to develop two cobs on the one plant.

Maize Yields

The average yield for grain in this country is from 45 to 50 bushels of shelled maize per acre. Where conditions of soil and climate are particularly favourable yields of over 100 bushels are fairly frequent.

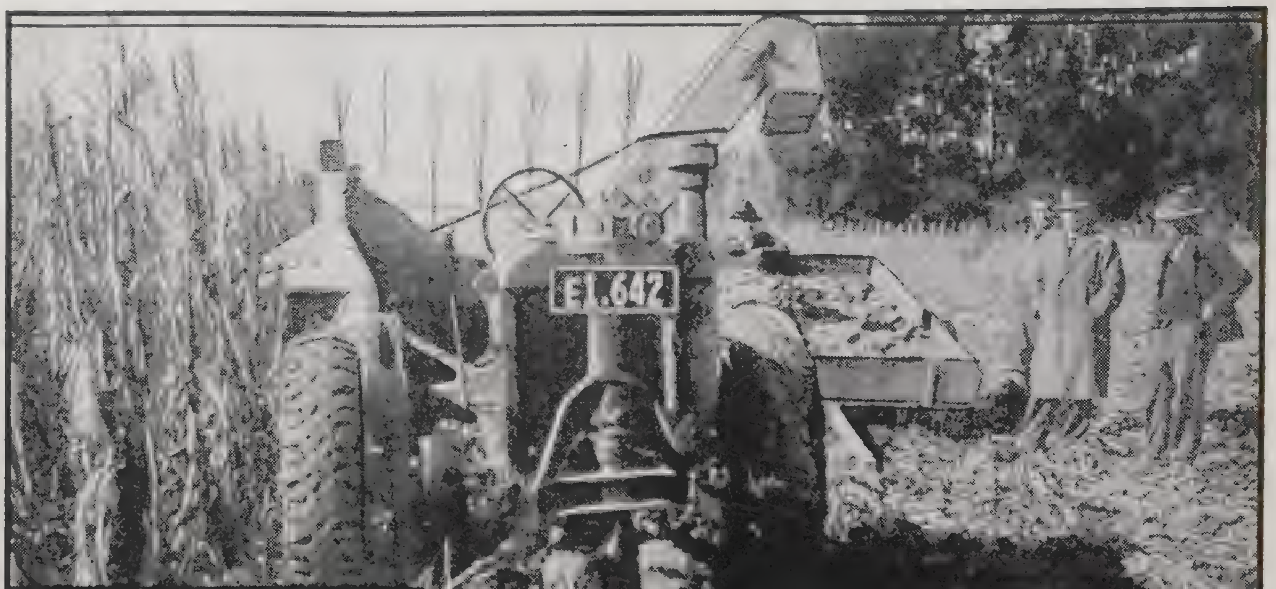
Manuring of Maize

Most maize crops are sown through a special two-row maize planter or through a grain drill adapted to sow two or three rows at a time. By either method fertiliser may be sown with the seed, but the capacity for sowing such fertiliser is limited to about 3cwt. per acre, a figure which has been accepted in most districts as a satisfactory level at which to manure. Where soil fertility is high, as it is on the richer flats in Poverty Bay and the Bay of Plenty, 3 to 4cwt. per acre can be regarded as sufficient, but on the lighter soils, especially for second crops, a heavier manuring is desirable. In fact, when fertiliser is again obtainable without restriction, it would be beneficial to step up the manuring to 5 or 6cwt. per acre on such land.

In the past superphosphate has usually been the sole or main ingredient in manuring, the selection of this fertiliser to the almost total exclusion of others being attributed mainly to the freedom with which it runs in sowing implements, and also to the comparative ease with which supplies could be obtained previous to rationing.

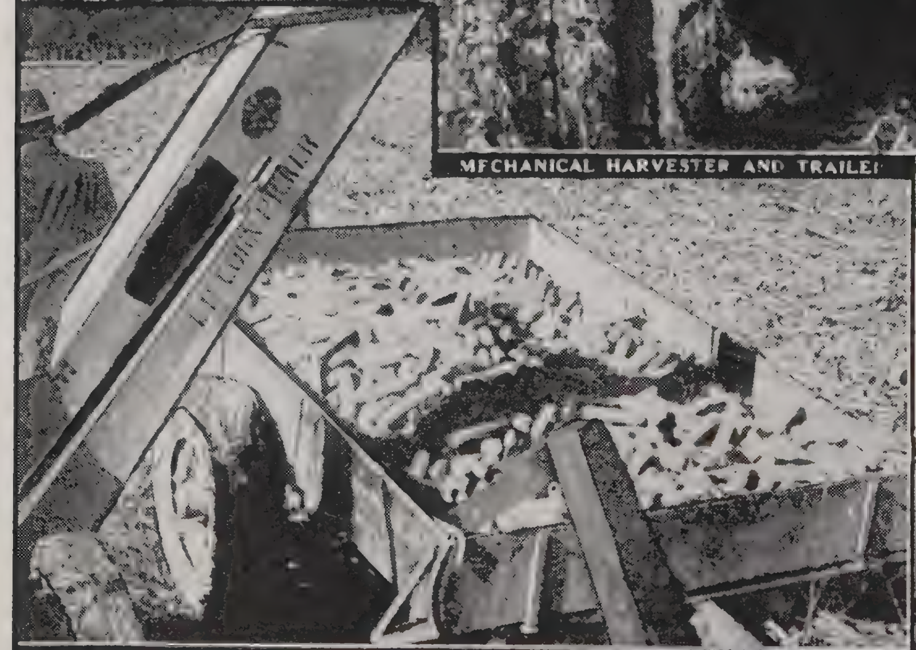
In some districts blood and bone was also used, either alone or in a mixture with superphosphate. This fertiliser gave particularly good results on all lighter country, where the natural fertility was rather lower than that required for good maize growing.

Experimental work with potash and such nitrogenous fertilisers as nitrate of soda and sulphate of ammonia has not been very extensive, but from the limited evidence available it appears that, while slight increases in yield

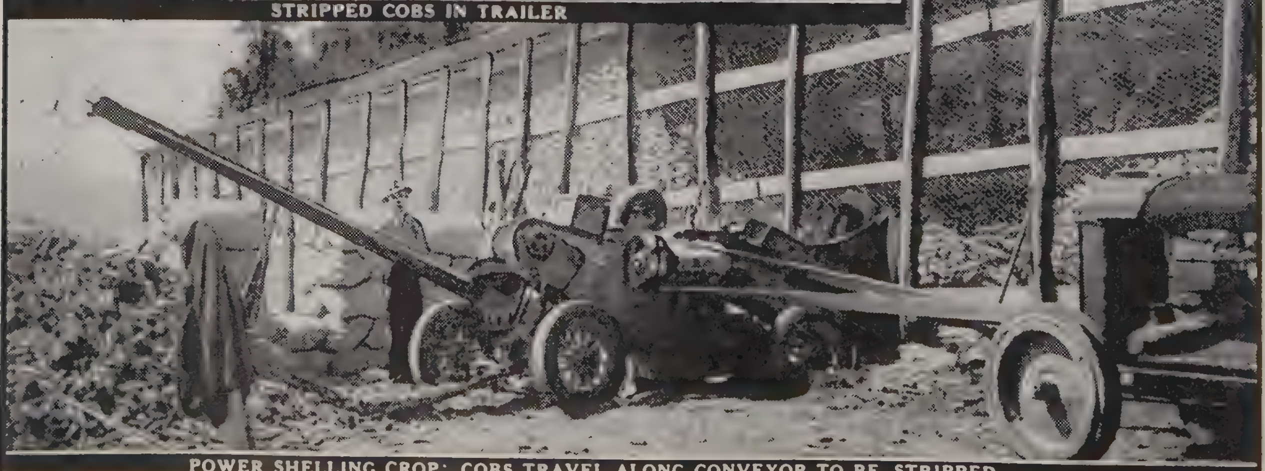


MECHANICAL HARVESTER AND TRAILER

HARVESTING AND SHELLING THE MAIZE CROP



STRIPPED COBS IN TRAILER



POWER SHELLING CROP: COBS TRAVEL ALONG CONVEYOR TO BE STRIPPED can be obtained by their use, these scarcely offset the added costs of manuring. Furthermore, these highly-soluble fertilisers, when sown in contact with the seed maize, have retarded germination to a marked extent.

In general the best manuring procedure appears to be to sow a mixture of equal parts of blood and bone and superphosphate at the rate of 3 to 4cwt. per acre on good rich flats, and the same mixture at 5 to 6cwt. per acre on lighter country, and for all second or third cropping with maize.

Intercultivating Growing Crop

Where maize follows grass the problem of weed control is not a serious one, but where second and third crops are grown in annual succession weeds often become prolific in their growth, and their control then becomes a major factor in deciding whether crops will be payable.

It is generally good practice to give cultivation of the crop that will ensure good results if weeds should be bad. If they are not, the work will not be wasted, as every act of cultivation will lead to better returns from the crop.

Intercultivation should commence as soon as the plants are a few inches through the ground. At this stage tine harrows should be drawn across the field at right angles to the rows. Provided a warm afternoon is chosen for this work, very little real damage will be caused to the plants, while the check to seedling weeds will be highly beneficial to the crop; many weeds between the plants in the rows will be pulled out, and much hoeing will be avoided.

When the crop is 6 to 8in. high intercultivation with horse- or tractor-drawn scarifiers can be carried out. As maize roots grow straight down for a few inches below the plants, and then run almost horizontally under the surface between the rows until they interlock with those of plants in adjacent rows, the first intercultivation may be quite deep, but as the plants grow it should be done at progressively shallower levels to avoid cutting off feeder roots, while at the same time giving the weed control that is so desirable in the growing crop. With crops sown on a "square" system intercultivation in opposite directions will give greater weed control.

As a further means of weed control, especially of those that avoid the cultivator, large mobs of sheep turned in for a few hours during February when the crop is well established will do much towards cleaning up the crop. They will eat off all lower leaves and most weeds, leaving the ground fairly clean and in excellent condition for harvesting later in the year. Also, by destroying most of this vegetative matter they remove all protection from pests such as caterpillars, so that birds can complete the work of cleaning up the crop.

The implement most commonly used for maize intercultivation is the adjustable single-row, one-horse scarifier, which can be used until the crop is well forward. In recent years small tractor implements such as the rotary hoe have been used quite successfully in place of the scarifier. On larger areas two-row, horse-drawn scarifiers are quite useful until the crop is about half grown, after which single-row implements must be used. Larger tractors are also used with tractor attachments or with tractor-drawn implements for cultivation.

The type of implement is of secondary importance, as the main objective is to cultivate the crop thoroughly and regularly until it is about to set cobs, which will usually entail at least five cultivations during the growing season. If these cannot be given with one type of implement, another that provides greater efficiency should be brought into use at a later stage. Thus, although a two-row cultivator will do good work on a young crop, it cannot straddle the taller stages, when a single-row scarifier could well be used.

Maize Harvesting

Most harvesting of maize in the past was carried out in May and June, when gangs, usually Maoris, performed the work on a contract basis, which usually provided for all picking to be done by hand and for bagging of the cobs in the field. Cartage from the field to the storage point was provided by the employing farmer.

Prices for this harvesting used to range from 30/- to 40/- per acre, the higher rates being demanded for harvesting the prickly Early Butler crops.

Harvesting can be done more expeditiously after the mature crop has experienced a few frosts, which have no damaging effect upon the grain, but tend to make the stems more brittle, so that the cobs come away freely.

In recent years hand picking has presented many problems to the grower. Largely because of labour shortage and higher outside wages, growers have resorted to mechanical harvesters, which not only greatly minimise these difficulties, but speed up the harvesting of crops. It is estimated that three men with a mechanical harvester can do the work of 20 hand pickers. In the accompanying illustration it will be seen that such a machine strips cobs from the plants, removes the husk, and delivers the cobs, quite free from extraneous matter, to an attached trailer. It is claimed that these machines will handle badly-lodged crops quite well. In the Poverty Bay district the machines operate on a contract basis, and without them many of the crops would have suffered severely through the shortage of harvesting labour. Similar machines are required in the Bay of Plenty, where labour is also becoming difficult to obtain. The problem of harvesting is the most important single factor that growers have to consider, and its solution by the provision of a greater number of mechanical harvesters should lead to an extension in the area devoted to the crop.

Storage of Maize

After the harvesting of maize some storage space must be provided until the grain is shelled from the cobs. Maize freshly brought in from the field is not fully mature; it still contains an excess of moisture which has to be dried out from the cobs before the grain can be shelled with safety. Consequently, in addition to providing accommodation that will protect it from the weather, good ventilation and aeration are essential if full maturity of the grain is to be attained. Normally this would take about six weeks, but frequently, because of pressure of other work or market conditions, the grower may be compelled to hold his crop considerably longer, and attention must be given to the construction of serviceable storage sheds or cribs.

To assist growers in the selection of a crib type, designs with explanatory notes are incorporated in this article. The main requirements of a good crib are:—

1. It should be made as weatherproof as possible, by providing for a fairly good overhang at the eaves, and by building in a position where it will not be exposed to prevailing bad weather.

Radio Broadcasts

RADIO talks to farmers will be given from Station IYA, Auckland, at 7.15 p.m. on the following dates:—

April 1—"Pasture Management," by Mr. A. V. Allo, Instructor in Agriculture, Tauranga.

April 8—"The Advantages and Disadvantages of *Glyceria aquatica*," by Mr. C. Walker, Instructor in Agriculture, Thames.

April 15—"Some Aspects of the Livestock Industry," by Mr. H. R Denize, Principal Inspector of Stock, Auckland.

April 22—"Young Farmers' Club Session," by a representative of the Auckland District Committee.

April 29—"The Fertiliser Position," by Mr. G. H. Holford, Superintendent of Fertilisers, Wellington.

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2. It should be made as vermin proof as possible by providing tin shields on piles, provided they are not less than 3ft. high, and by covering the crib with fine-mesh bird-netting when this is again obtainable.

3. It should be built to provide ample aeration of the maize, which can be attained by building the walls of narrow battens suitably spaced, or by using wire-netting on a wooden framework.

If a crib exceeds 6ft. in width or 8ft. in height, sweating and heating will occur, but the crib may be of any length to suit crop requirements.

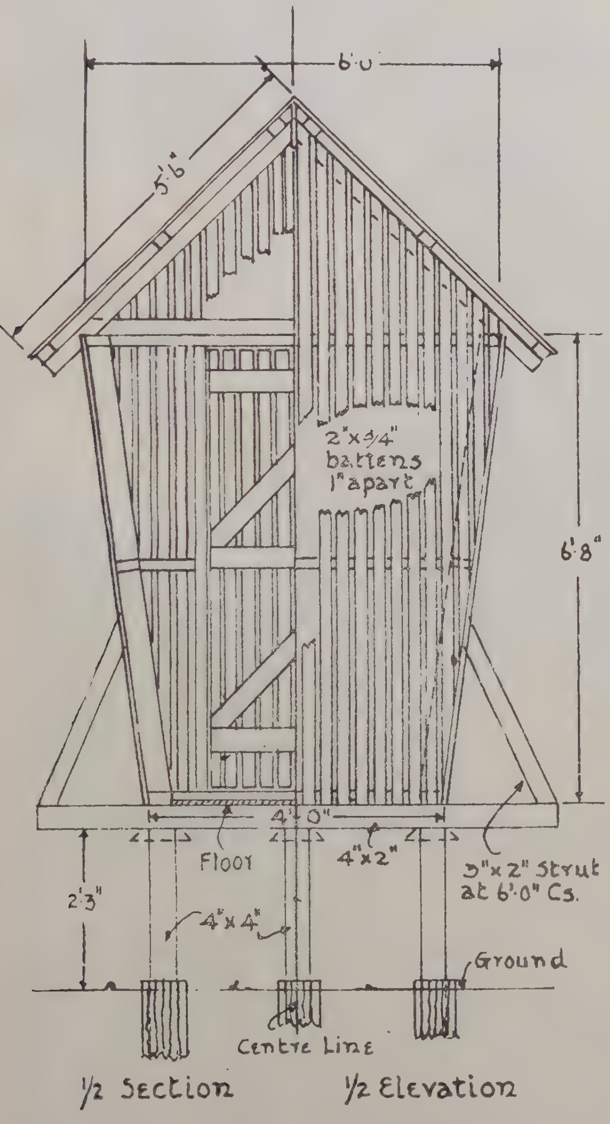
A further point of importance is that in filling a crib a space of approximately 1ft. should be left between the roof and the top of the stored cobs so that air currents can pass over and assist in drying out the cobs. If the crib is tightly filled, some sweating will occur to the detriment of the produce.

Types of Cribs

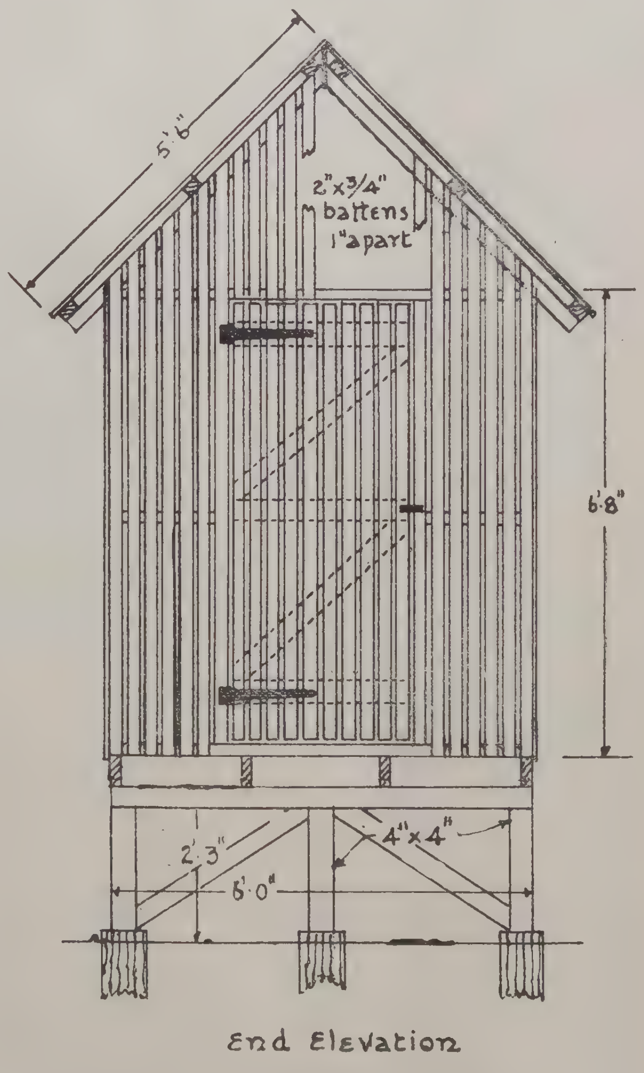
In making a choice of the type of crib to be built the following points should be considered:—

1. Will maize growing be a regular practice on the farm?
2. What total acreage is likely to be grown each year?
3. Will the crib be used for other purposes on the farm?

Where maize is grown in relatively small quantities, but as an annual practice, a fairly permanent type of crib, such as those depicted in accompanying sketches of types 1 and 2, would probably be the most suitable to erect. If the intention is to grow fairly large areas each year, a crib of the same type, but considerably longer, can be employed; or a grower may erect the combined double crib and implement shed to serve the twofold purposes of storing his maize and his implements. On the other hand, if a person intends to crop for only a few seasons as part of his land development policy, he may prefer to keep down costs by erecting a crib of type 3 or type 4. Both are freely used in maize areas and are reasonably satisfactory, but they cannot be expected to provide the efficiency in storage or the degree of protection from weather



TYPE 1.

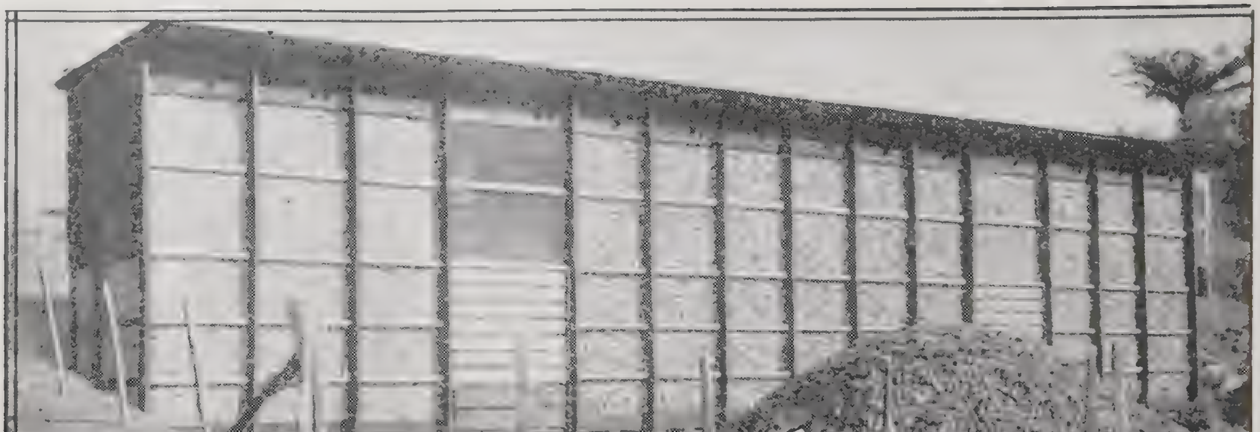


TYPE 2.

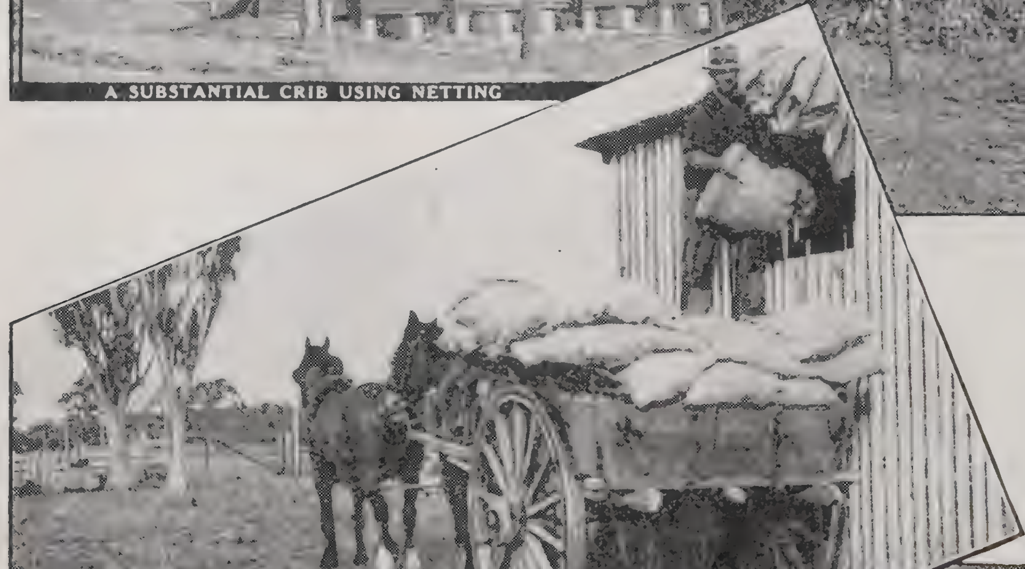
All main framing 4in. x 2in. Joists 5in. x 2in. Roof framing 3in. x 2in. Roof covered sarking and malthoid. Door 6ft. 3in. x 2ft. 6in. All posts 8in. x 8in. totara.

STORAGE OF MAIZE CROP

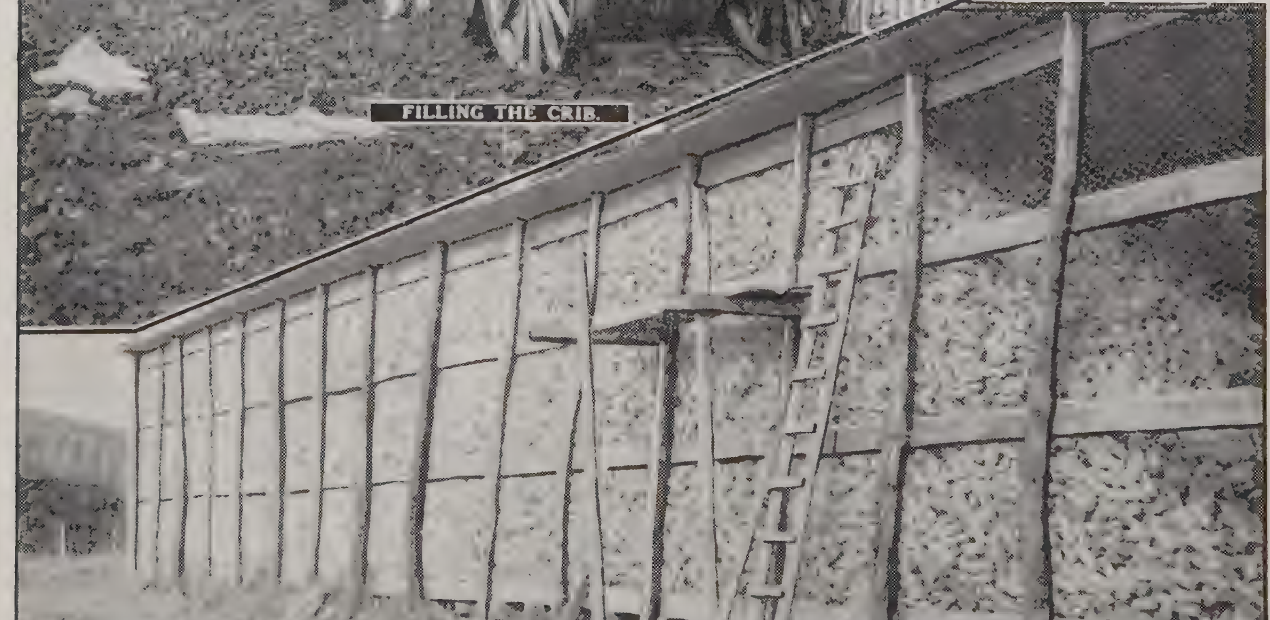
CRIB TYPES



A SUBSTANTIAL CRIB USING NETTING



FILLING THE CRIB.



CHEAPLY-CONSTRUCTED CRIB.

and vermin that the more permanent types will provide.

The provision of a well-constructed crib, even for farms where maize growing is intended to be only temporary, can be regarded as a sound investment if viewed from the angle of its value as a storehouse for tools, pumpkins, and chaff, when not required for the storage of maize.

Single Cribs:

The single maize crib shown in end elevation (type 1) was very commonly used in the early days of maize growing. The walls slope in from the eaves to the base, providing added protection from the weather, but the weight of maize adds considerable stresses on the walls when the crib is filled, and struts to offset these strains have to be provided in the manner shown in the sketch. These cribs taper from 6ft. in width at the eaves to 4ft. at the floor level, and are usually 7 to 8ft. high. Length may vary according to the amount of maize to be stored. Few of this type are now built, as it is recognised that the straight-sided cribs provide more storage space with less constructional problems.

A crib after the style of type 2 has practically superseded that of type 1 in all recent buildings because of its simplicity of construction and greater storage capacity. By having the walls vertical no undue stresses are placed upon them, and side struts are not necessary.

Type 3 shows a good style of crib incorporating a lean-to roof. This crib is as efficient as the two former types, while the adoption of this type of roof reduces the cost of construction. It is therefore a good type for permanent maize growing or where a good building is desired for temporary maize cropping.

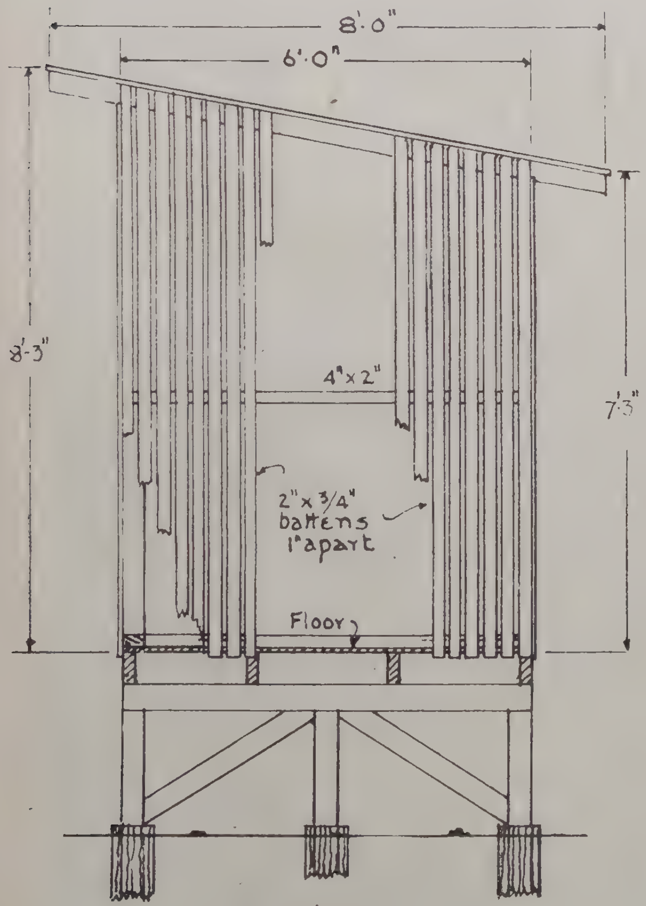
The style of building shown as type 4 is essentially a temporary one, suited for areas where maize cropping is unlikely to continue for more than one or two years. The base may consist of odd limbs, roughly covered by boards. The uprights may be willow, gum, wattle, or any timber that will last two years or so, while the whole frame is covered with netting, which should be supported by battens nailed to and between uprights to give support. Such a crib cannot be recommended except for temporary storage, and it should be recognised that losses due to vermin will be high in this type.

Double Crib and Implement Shed:

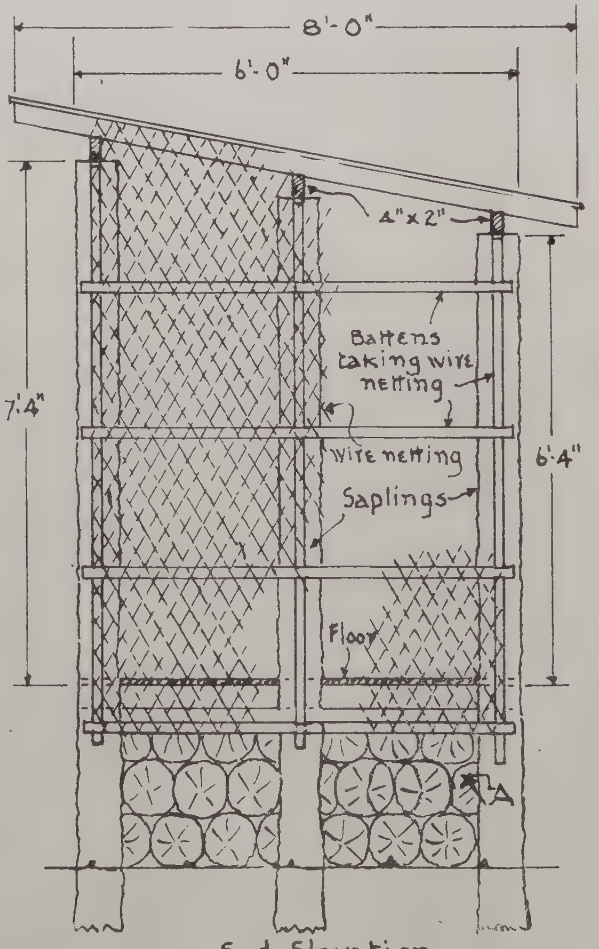
For farmers who have fairly large areas under crop and could benefit from the provision of an implement shed as well, the sketch showing an end elevation of such a building indicates the general lines of construction. There is a maize crib on either side with a 12ft. space between for the housing of implements. Ample height is also provided for normal requirements, but all dimensions can be varied to suit individual requirements.

Capacities of Cribs

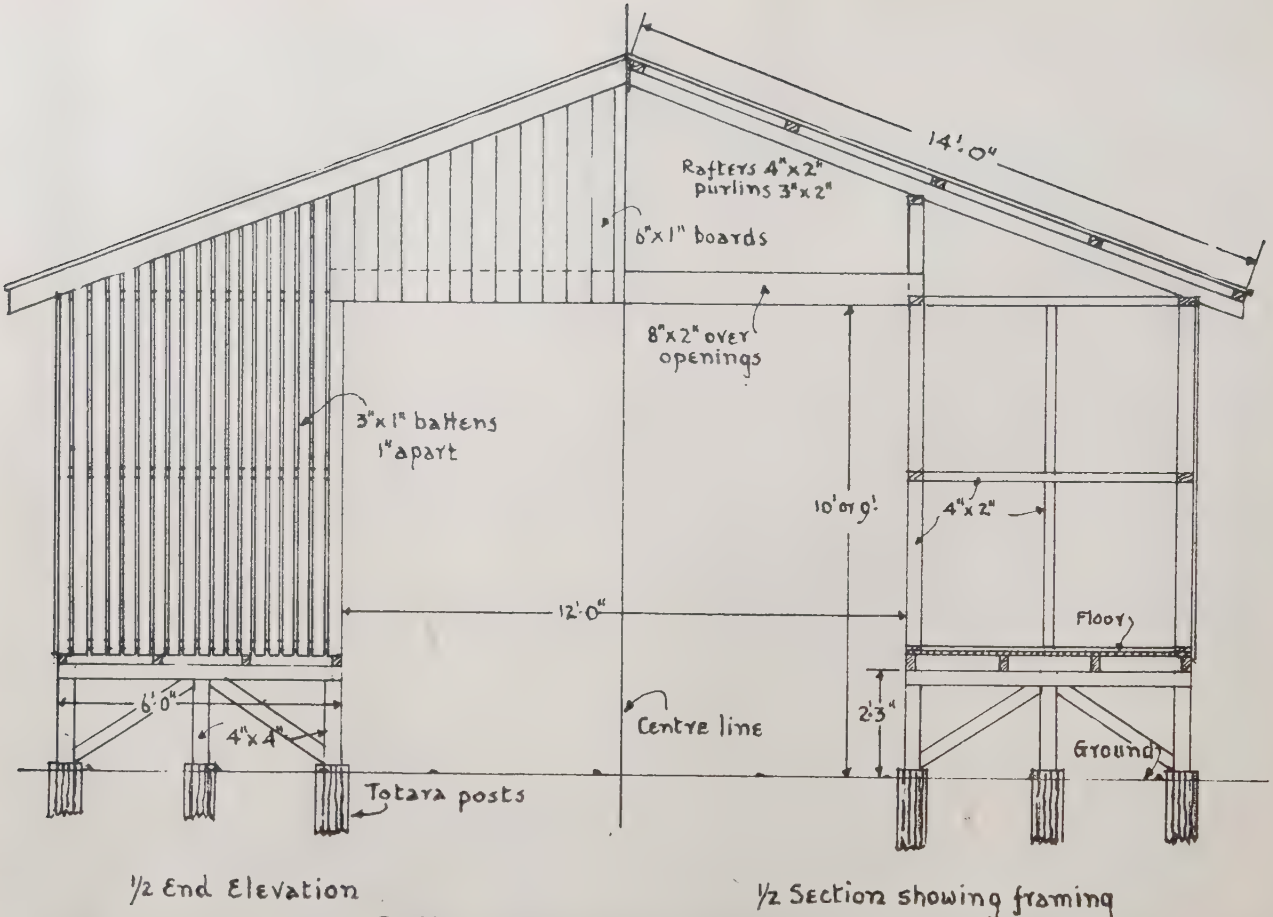
As cribs provide storage for maize in the cob, it is necessary to know in advance what space will be required for the crops to be grown. Yields fluctuate a great deal from district to



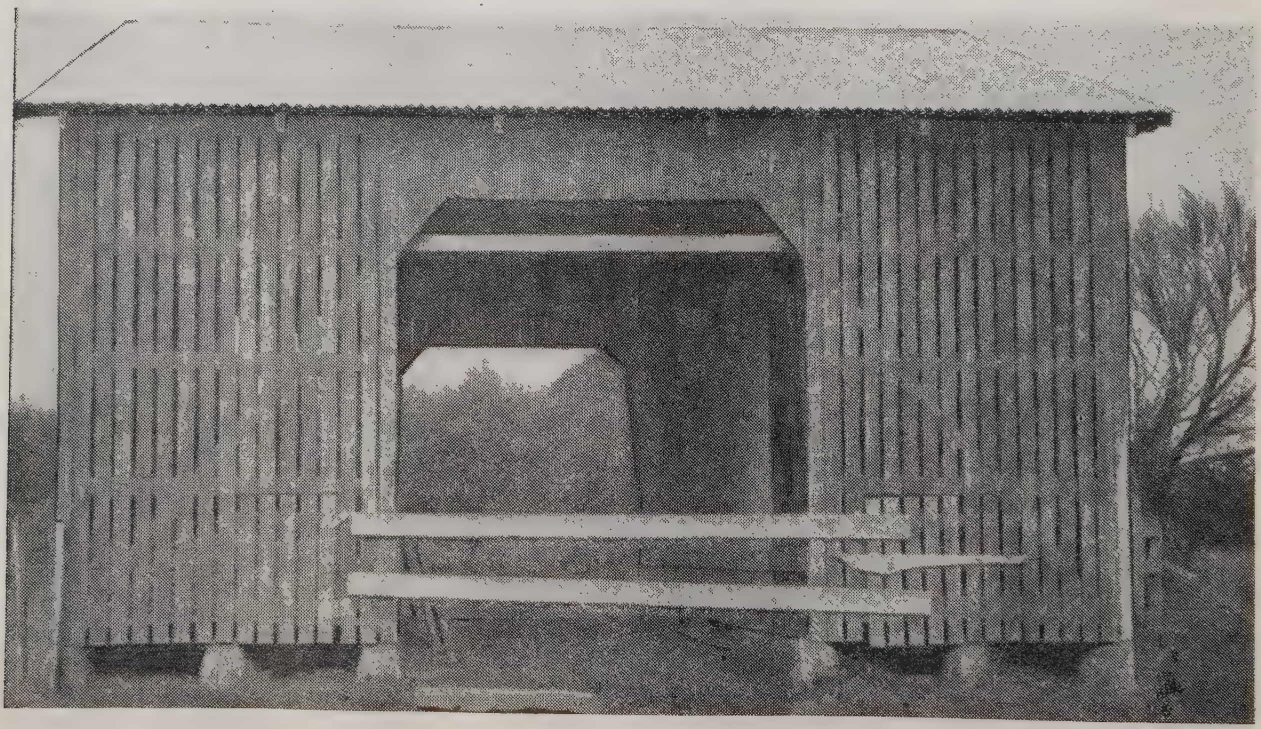
TYPE 3.



TYPE 4.


14'·0"
Rafters 4"x2"
purlins 3"x2"
6"x1" boards
8"x2" over openings
3"x1" battens
1"apart
10'or 9'
4"x2"
12'·0"
Floor
2'3"
6'·0"
4"x4"
Centre line
Ground
Totara posts
½ End Elevation
½ Section showing framing

Combined double maize crib and implement shed.



A double crib and implement shed built on plans similar to above.

district, and also according to varieties grown, but, as a general rule, it can be taken that every acre of a good average crop will require 6 to 8ft. of crib length where width and height are in the vicinity of 6 and 7ft. respectively.

Other Uses for Cribs

Apart from the storage of maize between harvesting and shelling, a maize crib provides an excellent storage place for other materials. Bran, pollard, grain for fowl or pig feed, and meat-meal and stock licks can all be housed under dry conditions and away from vermin, and farm-grown crops, such as pumpkins, can be given protection from the weather. Tools, small implements, and a host of sundries may also be kept in such a building. Thus, a maize crib need not be considered as having outlived its usefulness once maize growing has ceased. Rather will it prove a permanent asset, which may at any time be called upon again to perform its original function of maize storage.

Farm Seed Selection

Maize for seed is usually saved from the crop grown in the previous year. Occasionally seed is purchased to introduce a new strain, but generally seed bought in is no better than, and often not as good as, that grown on the farm.

In the absence of a seed certification system the production of seed maize for sale has left a great deal to be desired. Examination of many lines has indicated very clearly that much nondescript seed maize is marketed, crops from which are unlikely to give satisfaction. In fact, just as with certain pasture plants prior to certification, it is highly probable that much of the dissatisfaction with maize could be traced to inferior seed. Steps are now being taken to ensure that supplies of certified seed maize will be available in the near future, and in the meantime seed may be bought in from reliable growers who make a speciality of certain varieties. Until maize seed is certified, strains should be procured from these reliable sources, and seed selection subsequently practised on the farm.

In farm selection certain bad practices have developed, perhaps the worst being that of selecting cobs for seed from the crib, when too often all the big cobs are taken out for seed purposes. It cannot be denied that the selection of big cobs is sound under certain conditions, but unless these conditions have been fulfilled, there is no certainty that such cobs will provide high-yielding crops. For instance, the outer rows in a crop will provide sturdier plants bearing larger cobs, and it is possible that in crib selection many cobs will be taken that were grown under favourable conditions. It is very desirable, however, to know whether a cob was well covered; whether it adopted a pendant position to protect it from weather conditions; whether it was well placed on the stalk; and whether the stalk itself was sturdy or slender. As crib selection can furnish no information on these points, the system cannot be recommended.

A far sounder method is to examine the crop carefully before harvesting, and select good cobs from within the crop, adopting as a standard those which conform generally to the above requirements. Cobs should feel weighty, have deep grain of good shape in good even rows, and both ends of the cobs should be well filled. In general, the cob should be cylindrical rather than tapering to any marked extent. This method of selection is not laborious, as only 14lb. of seed are required for each acre to be grown; the work of selection also becomes very interesting as it proceeds.

Under farm conditions the average grower cannot do much more than adopt the system set out above, but it does possess a number of weaknesses that will be apparent to plant breeders. However, in the absence of improved lines for farmers' use, it will serve as a sounder method of retaining a good line than that of buying in seed of unknown value each year.

Improvement by Breeding

In the corn areas of the United States much improvement in maize varieties has resulted from a programme of maize breeding under which known varieties are first of all self pollinated for several generations to develop a fixed type and to bring out their good and bad features. Cross pollination is then undertaken of two such inbred varieties which have been selected because of their ability to transmit their desirable qualities to the hybrid offspring. A further step involves the further cross pollination of two distinct hybrid offspring producing what is termed a "double hybrid." This is the seed used for sowing the commercial crop, but because of its complex make-up the resultant maize is not suitable for seed, and fresh "double hybrid" seed must be produced each year.

Great benefits, including yield measures of up to 50 per cent., have resulted from the adoption of these practices in the United States, and work of a similar nature is being commenced in this country in an endeavour to improve maize varieties. The work comprises a very long-range project, however, so that results cannot be expected for a number of years. It is not the sort of work which can be undertaken by private individuals, but the rate of multiplication of maize is so great that once the parent types are selected, no dif-

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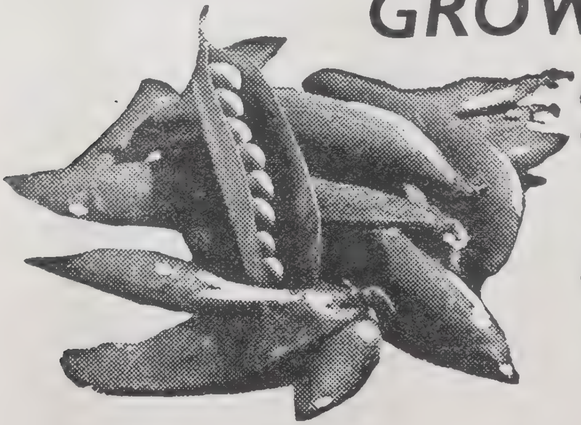

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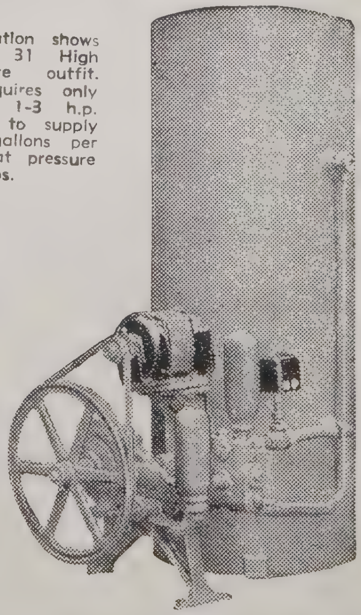

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ficulty is anticipated in being able to meet the seed requirements of all commercial maize growers.

Diseases

In the past maize in New Zealand has been remarkably free from diseases, but recently, particularly in the Gisborne district, there have been occurrences of both pink cob rot and maize smut. In the Bay of Plenty slight attacks of the former have also been experienced. In general it cannot be said that either disease has so far been a serious menace to maize growing, although in some instances whole crops have been destroyed. The presence of such diseases, even to a relatively unimportant extent, should be viewed with some concern, as they may suddenly develop epidemic form which would seriously affect the industry.

Unfortunately, little is known of control measures, but any outbreaks, however slight, should be notified so that the disease can be studied with a view to effecting some measure of control. If growers refrain from cropping again with maize on land known to have had a diseased crop, and use only seed known to have come from a disease-free crop, the diseases can be at least localised. Another source of infection is the use of implements borrowed from an area where disease has occurred.

Insect Pests

Until recently the chief insect pest of maize was the cutworm, which, appearing in late summer, frequently defoliated the crop and often destroyed the immature grain. Cutworms are encouraged by poor preparation and indifferent intercultivation, and if cultivation is left until the last week and weeds permitted to flourish in the growing crop ideal conditions are provided for the pest. On the other hand, the grower who ploughs early, winter fallows, works his land well and allows birds to gather hibernating grubs, and then keeps his crops free from weeds, is doing everything possible to prevent cutworm attacks. In other countries poisoning is resorted to, but here the pest is seldom bad enough to warrant it. Good husbandry will usually provide all the safeguards that are necessary.

The grass-grub beetle and aphides also damage the growing crop, and the grain weevil attacks stored grain. Grass-grub beetles are usually troublesome along hedge lines in the late spring or early summer, when they eat off the young plants. Their attack is of short duration, and as the time and point of attack, beyond the limits mentioned above, are practically unpredictable, it is very difficult to provide control measures.

A crop of maize heavily attacked by cutworm, with severe defoliation of plants.

Aphis attack is by no means general, nor can it be considered a serious menace to maize growing at present. Attacks are usually very isolated, and would be very difficult to control by spray measures in a maize crop. Such means of control are as yet unnecessary, but the position requires careful watching in the immediate future.

Grain weevil appears a little in most maize districts, but its attacks seldom render the grain unmarketable. At the worst the damaged grain still has a value if boiled and fed to pigs. Where grain weevil is suspected it is advisable to fumigate the storage point well before grain is brought to it. Occasional examination of the grain will indicate whether the weevil is present, in which case further fumigation can be resorted to.

Utilisation on Farm

Most maize grown on the farm is eventually fed to stock, generally for the production of pig meats and eggs. While maize is by no means a balanced ration, it provides a useful foodstuff when fed in conjunction with skim-milk and meat-meal. It is occasionally cracked and used as a substitute for oats in the ration of working horses, or ground finely and employed in calf meals. In pig farming it often provides the means for farmers to carry autumn-farrowed litters through the winter at a relatively low cost for foodstuffs.

There are various methods of feeding the grain, some farmers even turning their pigs into the standing crop, a method which is extremely wasteful of grain. Others throw unshelled cobs to their pigs, or feed the shelled grain either in troughs or scattered on the ground. None of these methods can be recommended. Untreated grain is not easily digested, and much of it passes through the animals whole or partly-whole. Where pigs are fed on open-range pasture through the winter they may be fed by scattering grain on the pasture, but it is far more economical to treat the grain by soaking or boiling it before feeding it to the stock. Where soaking is to be done the grain should be left in barrels for 24 to 48 hours to soften thoroughly before it is fed to pigs, and if it is boiled, the grain becomes jelly-like when ready for feeding.

Pigs on grass will do quite well on 1lb. of grain per day, but for later topping off the amount should be at least trebled. Pigs carried through the winter as stores require about 2 to 2½ bushels of grain each.

The general opinion among poultry-keepers seems to be that maize, when fed with a good supply of skim-milk, provides quite a good ration for laying birds. Maize alone tends to cause undue flesh formation with a consequent reduction in egg production.

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Making Seasonal Ends Meet in the Home Garden

By D. K. PRITCHARD, *Instructor in Vegetable Culture, Wellington.*

THE cultural work of sowing seeds and transplanting vegetable seedlings during April will, with few exceptions, be of somewhat minor importance. This does not mean that work of any description in the garden is either useless or unimportant. What may be done with advantage is to review the work which was carried out during the season; and from experience which may have been gained to make decisions for future activities.

IF prevailing winds restricted the proper development of plants, consideration should be given to the provision of shelter for the protection of future crops. The nature of shelter which may be provided will be largely determined by the extent of the area of land used for gardening. On very small areas permanent shelter hedges, if permitted to grow very high, would cast shadow over too much of the garden. In providing shelter from winds, shade which may be responsible for the production of weak, spindly growth should be avoided.

Composting

Home gardeners desirous of having a supply of humus from a compost heap for use in early spring should collect material and make preparations as soon as convenient.

A proper compost heap is not made by simply stacking up garden residues in a spare part of the garden. Great care in laying the foundation and subsequent building of a compost heap is necessary to ensure that the finished product will be beneficial for the soil to which it is applied.

Seaweed can be obtained economically near coastal areas, and may be used either in "green" condition or composted with stable manure. If it is left in heaps exposed to leaching by rain, much of its plant food content may be lost. Potash is the most valuable nutrient content of seaweed. A ton of seaweed contains approximately the following:—Nitrogen 7lb.; phosphoric acid 2lb.; potash 22lb.; salt about 35lb.; organic matter 400lb. It is lower in both nitrogen and phosphoric acid, but very much richer in potash than stable manure. Because of its high salt content, which may be detrimental to the production of high-quality potatoes, it is best applied during autumn or winter to land in which it is intended to grow this crop.

Fish waste is another organic material of which good use may be made as a fertiliser for the home garden. According to its moisture content, fish waste will vary in the amount of plant food it contains. It may be applied to the ground fresh, or it can be mixed with soil, the ratio recommended being 1 part fish to 5 parts soil. It should be applied during autumn and spring at the rate of 1 ton per acre on land which is to be used for growing a potato crop.

Another method recommended for breaking down fish waste is as follows:—Into a trench 24 to 30in. deep place a 12in. layer of fish waste. This should be dusted generously with lime —slaked or unslaked—the whole being covered with a layer of soil 3 to 4in. thick. The operation should be repeated until the trench is filled, when it should be topped off with a substantial covering of soil. Fish waste treated in this manner quickly and thoroughly will give no offensive odour.

Tomatoes

As much as possible of the foliage remaining on tomato plants should be retained at this time, not particularly for the development of the plant, but to protect whatever fruit still remains on the vines from the damaging or destroying effects of frosts. As the incidence of late blight becomes more prevalent during cold, humid weather conditions, spraying with Bordeaux mixture should be continued at intervals as long as there is foliage and fruit to be protected.

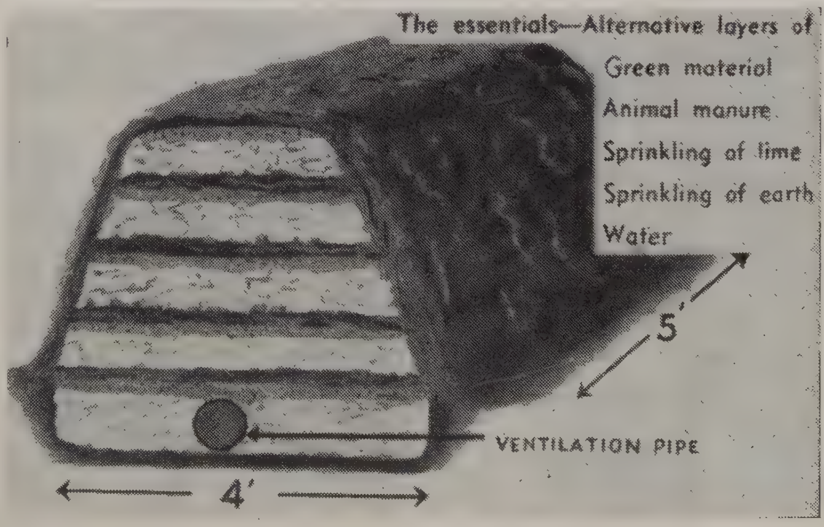
Matured fruit may be picked and kept under conditions where it will not be subjected to cold temperatures, but it should not be packed in cases. Fluctuations in temperature will cause condensation, and, as the moisture deposit on the tomatoes will not dry, disease will soon develop and destroy them.

Kumaras

Kumaras require attention during early April or when and where early frosts are likely to be experienced. When digging kumaras the tubers should be handled carefully, particularly if any part of the crop is to be stored.

Cauliflower

Where true varieties of cauliflower are being grown every effort should be made to bring them to suitable harvesting condition before the tender curds are affected by frost. If the plants are well grown and have abundant heavy leaves, these may be tied together at the top, but care must be taken that the head will not be restricted in its development. Where watering during April is considered necessary for cauliflower, it is essential that drainage should be good. When soil becomes waterlogged late in the season the growth of cauliflower plants will be checked, and if the plants re-



[*Sparrow Industrial Pictures photo.*

A proper compost heap is not simply a stack of garden residues. Great care in laying the foundation and subsequent building is necessary.

main in the garden till spring they will develop small curds and prematurely run to seed.

Broccoli

The seedlings of broccoli are much hardier than those of cauliflower, and will remain undamaged by frosts which would render heads of the latter unfit for consumption. Broccoli plants set out to mature in June-July should be well grown, but may require additional fertiliser to assist maturity. During cold weather nitrogenous fertiliser can be applied either dry or in liquid form. A "pinch" of nitrate of soda applied to the soil near the stem of each plant at 10- to 14-day intervals, and lightly worked in, will supply the necessary stimulus for plant development. Nitrate of soda may also be applied in liquid form by dissolving 1oz. in 4 gallons of water.

Cabbage (Spring)

Where aphides are troublesome as pests on spring cabbage seedlings, April is generally the best month for transplanting. Methods practised for aphide control in the seed-bed should be continued as long as this pest infests the young plants. Where the garden is low-lying it is better to make up a raised bed in which to set out the plants. As spring cabbage can be grown much closer than other cabbage varieties, the manure may be broadcast over the area it is intended to use immediately after digging and thoroughly mixed with the soil. The fertiliser mixture recommended should consist of 2 parts blood and bone manure and 1 part superphosphate, applied at the rate of 6oz. per square yard.

Spring cabbage seedlings grown 12in. apart each way will provide early spring greens, and later excellent full-grown specimens.

Potatoes

Nothing is to be gained, and much may be lost, by permitting fully-matured potatoes to remain undug. If possible, a fine day with a good wind blowing should be chosen for digging the crop and the work started early in the morning.

When the tubers have dried they should be picked up and bagged or cased ready for storage. Leaving potatoes exposed overnight or covering filled bags with bundles of haulm is bad practice, as it gives the potato tuber-moth the opportunity of infesting the crop during storage.

Carrots

On relatively light, well-drained soils, seed of Chantenay or Early Short Horn carrots may be sown for spring use. To obtain best results advantage should be taken of favourable weather to make up a raised bed in which to sow the seed. For this sowing the distance between the rows need not exceed 9in. Close attention to weeding will be necessary, and, provided the seed is sown sparsely, judicious selection of young roots for culinary use will be sufficient thinning. When young carrots are removed vacancies should be filled in by pressing soil around the remaining roots. The bed for this sowing of carrot seed should be just broad enough to permit all work to be done without treading between rows. Operated in this way, the soil will not be trodden hard during winter, which is an advantage where young crops are being grown.

DON'TS

DON'T neglect any opportunity of sowing seed for a green manure crop. To maintain humus in the soil, it is an excellent substitute for stable manure.

DON'T permit the compost heap to become water-logged. It should be covered, especially during periods of heavy rain.

DON'T dig diseased plant residues into the garden soil; they should be destroyed by burning.

Onions

Home gardeners who have not yet sown onion seed for spring planting should do so as early as possible. The seed may be sown in a box not less than 6in. deep or in a sheltered bed, preferably with an eastern or north-eastern aspect, which will get the early morning sun. Broadcasting onion seed cannot be recommended; it is better sown in rows. Pukekohe Long Keeper is the variety which should be used for this sowing.

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Autumn Management of Pastures

By E. R. MARRYATT, *Fields Instructor, Whakatane.*

LATE summer and autumn management of established pastures includes the cleaning up of undesirable growth and spelling to provide feed for early-calving cows. Towards the end of February or early in March is an admirable time to clean up pastures for a good getaway with the autumn rains.

A PASTURE which has not been cleanly grazed by stock and which has seed stalk and roughage to any extent cannot be expected to respond to fertiliser and warm rains as well as will a clean sward. As the summer advances the grasses approach maturity and provide only seed stalks and roughage, and only complete removal of this mature growth with the mowing machine will encourage the production of leafy autumn growth.

Concentrated Grazing of Sheep

Use of the mower at this time of the year also makes difficult the seed setting of late-flowering pasture weeds, which may include thistles, fleabane, and buttercup. Besides the mowing machine, sheep could sometimes be used to advantage more than they are at present on some dairy farms for cleaning up pastures after the cows, particularly for the control of certain weeds such as ragwort and twin cress (*Coronopus didymus*) which today menace dairying in some districts.

When cream is being returned to the farm from the factory as unfit for making into butter because of "cress" flavour, no measure to overcome the trouble can be too drastic. The grazing of sheep along with other modifications in pasture management seems to be the only satisfactory method at present of dealing rapidly and effectively with these two problem plants where they are causing concern and direct financial loss to the farmer. For this purpose enough sheep should be purchased to allow the farmer to concentrate them at the rate of 50 per acre in grazing infested pastures. The carrying of this increased number of sheep may entail a reduction in the milking herd, the improvement of fences on most farms, and even the installation of shearing machines, but all this is preferable to producing cream which the factory will not take.

Topdressing will not be fully effective on this pasture unless it is first topped with the mowing machine.

Winter-spelled pasture provides good feed for early-calving cows.

Winter Spelling for Early Feed

To supply late winter and early spring feed for early-calving cows a proportion of the farm should be winter-spelled on the "long spells between lenient but rapid grazings" principle. This cannot be done if the farm is overstocked. It also involves topdressing early, commencing feeding out before it really becomes necessary in the ordinary course of farming, and closing the selected fields early while pasture plants are still growing actively, that is, not later than mid-April for best results.

The fields selected for this purpose should be the best ryegrass pastures or alternatively any clovery pasture which is required to be changed into a grassy pasture, provided it has a good strain of ryegrass in it. Pastures that are otherwise reasonably good but that already contain more Yorkshire fog and cocksfoot than is desirable should not be chosen for winter spelling, as the practice will definitely increase the vigour of these species to the detriment of better ones. These species will, on the other hand, produce considerable leafage in the winter and provide reasonably good feed for early-calving cows.

To estimate the area required for saved winter grass it may be assumed that when fully fed a cow grazes for about seven hours in the daytime and for about five hours at night, and that the pasture before grazing will be permitted to grow to the 8in. stage and be grazed down to 3in. Twelve cows will graze an acre of pasturage from about 8in. to about 3in. in about 24 hours of actual grazing time. If rationed for two hours only a day to 12 cows, an acre of this type of pasturage will last from a week to 12 days. As rationing is likely to be required for about a month in the early spring, about 4 acres will be required for every 12 early-calving cows. This, of course, should be regarded as the minimum area to shut up in the autumn, and the maximum could well be from one-quarter to one-third of the farm.

Education for Handicapped Children

To assist children who are handicapped through physical or other disabilities many forms of assistance are provided by the Education Department and Education Boards. These include:—

1 FOR THE DEAF: the N.Z. School for the Deaf at Titirangi (Auckland) and Sumner (Christchurch) teaches children to lip-read and to speak. Besides this, the school gives a good general education.

2 FOR THOSE WITH SPEECH DEFECTS: special clinics attached to many primary schools give individual training to children with speech defects.

3 FOR THOSE WHO ARE 'HOMEBOUND': the Education Department's Correspondence School provides postal lessons (from infant school to university scholarship standard) for children who are 'homebound' on account of physical disabilities, as well as for children in remote areas who are unable to attend school.

4 FOR THOSE WHO ARE 'BACKWARD': special classes are arranged for children who for any reason are not able to make the progress of the normal child.

5 FOR THOSE IN HOSPITAL: sixteen 'hospital' schools help to maintain the educational progress of children during temporary absence from school caused by sickness or injury.

6 FOR THE BLIND: Government assistance is given to a special school at Auckland conducted by the N.Z. Institute for the Blind. Braille is taught as a basis for a general course, followed by specialised training for a career.

Further information can always be obtained from the Education Department, Wellington, or the Senior Inspector of Schools, Education Board, Auckland, New Plymouth, Napier, Wanganui, Wellington, Nelson, Christchurch, Dunedin, Invercargill.

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Answer to Correspondent

Treating Mares to Assist Breeding

"J.C.J.," Keri Keri:—

Can you please tell me whether it is good policy to have a mare "covered" each day she is in season, or only once, and would it have any bearing on her having twins? I have a valuable thoroughbred mare. She is 13 years old, and has had several foals. She had a foal in 1944, but was not served that year. I have had her at the stud this year, and she was served in October, but came back 26 days later. In the event of her coming back again, is there any way of treating her to assure her breeding? The mare was only very lightly raced when young, and is perfectly sound.

LIVESTOCK DIVISION:—

It is not recognised as a good policy to "cover" a mare every day when in season; provided the sire and dam are normal, two services should be quite sufficient. The number of services has no effect on the bearing of twin foals.

In the event of the mare returning again, no harm can be done by having her served. To determine if any abnormal conditions exist, a careful examination would be required; failing this the washing out of the mare 24 hours before service with the following preparation may prove beneficial:—

1 dram Lugol's solution of iodine,
2 drams common salt,
2 pints boiled water,

the mixture to be injected at blood heat, well forward in the passage.

Pig Broadcasts

UNDER the auspices of District Pig Councils broadcasts will be delivered in April, 1946, as under:—

Auckland—1YA, on April 17, at 7.15 p.m., "Winter Feeding of Pigs," by W. C. Wallace, Supervisor, Waikato District Pig Council.

Dunedin—4YA, on April 8, at 7.15 p.m., "Points to Remember in Planning the Locating of the Farm Piggery," by Norman McDonald, Supervisor, Otago-Southland District Pig Council.

Palmerston North—2ZA, on April 21, at 7.15 p.m., "Whey Feeding," by L. Marsdon, Supervisor, Wellington District Pig Council.

Napier—2YH, on April 9, at 7.15 p.m., "Preparation and Feeding of Concentrates to Pigs," by H. Hopkins, Supervisor, Tairawhiti District Pig Council.

Importance of Flavour In Honey

By E. SMELLIE, *Apiary Instructor, Christchurch.*

THE extraction and packing of the season's honey yield will now be occupying the attention of honey producers. As the popularity of honey depends not only upon its value as a food, but also upon the delicacy of its flavour and its attractive appearance, beekeepers should strive for better quality by studying and applying improved methods of handling and packing.

THE quality of the honey as gathered and stored by the bees—though it may differ in flavour and colour—cannot be improved by the beekeeper. Nevertheless, other factors contributing to the general condition of the honey need the careful attention of all beekeepers.

Flavour

Flavour is the most important factor in honey production from a sales point of view, provided that the honey is otherwise in sound condition. Flavours in honey as gathered by the bees depend on the flora peculiar to the district in which it is produced; owing to the great variety of nectar-secreting trees and plants in the Dominion, and their varying combinations in each locality, no two honies are exactly alike.

Individual producers should endeavour to maintain a pack which has reasonable uniformity of flavour, and which conforms to the requirements of their clientele.

Beekeepers who operate a number of out-apiaries in districts where clover and mixed sources are available, and who also utilise a series of tanks for the purpose of handling large quantities of honey, can achieve a consistency of flavour and quality in any particular line by stacking the supers in the order they are taken from the hives, and extracting a super from each stack until a complete round has been made. This practice can be followed through until the whole apiary has been completed.

Similar uniformity can be secured in smaller apiaries by taking the supers singly from the hives until a complete round has been made, and extracting each set of combs from any one apiary in one lot.

A variation in flavour and colour cannot be avoided in some districts where the supers of surplus honey are removed from the hives at one operation without regard to the order in which the combs are to be extracted.

The natural flavour and aroma of honey may be impaired or destroyed through absorption of fumes from foreign elements—carbolic acid, oil, or sulphur—or by overheating and fermentation. Care should be taken to eliminate any contaminating influences before the extraction and exposure of honey.

Condition

While most of the honey sold in New Zealand by beekeepers is of a high standard, improvements may still be made to ensure that all honey of good quality is offered for sale in the best condition.

Overheating

The equipment used for heating honey should be used judiciously; constant attention is necessary to avoid overheating.

The maximum temperature to which honey should be heated for ordinary conditioning purposes is 140 deg. F. On no account should direct heat be applied to any appliance or vessel containing honey. Heat should be applied to honey only through the medium of water or a steam jacket to reduce the possibility of its becoming caramelised and darkened in colour.

Any heating apparatus—jacketed pipes leading from the honey pump, steam or water jacketed cappings reducers, or steam coils in the extractor or honey tanks—may do considerable damage to the honey by overheating, unless the honey is constantly agitated or is in motion sufficient for no portion of the honey to remain in contact with the heating surface for any length of time.

Added Moisture

Honey is hygroscopic and, under certain conditions, may absorb a considerable quantity of water in a number of ways. The most common are:—

1. **The removal of honey from hives during wet weather when the supers and combs cannot be kept dry;**
2. **The extraction of honey under similar conditions;**
3. **The storage of full combs of honey in the honey house for any length of time prior to extraction;**
4. **The leakage of tubes on steam uncapping knives and the exposure of cappings and honey drainings to the atmosphere; and**
5. **The exposure to a damp atmosphere of extracted honey in storage tanks.**

These can be avoided with correct management or with ordinary care. Honey storage tanks should at all times have tight-fitting covers.

Strainers

Normally it is necessary to strain all honey; this is best done as it enters the holding tanks.

When honey passes through a strainer it is broken up into thin threads which, after leaving the strainer, become small drops. These are especially evident when the honey has not been warmed, and if they are allowed to fall any great distance they will cause air bubbles in the honey. For this reason it is important to baffle the honey as it leaves the strainer with a plate or board placed close to and directly below the straining surface. In this way the honey can be guided to the side of the tank where it will flow gently down in a solid stream—thus reducing the admittance of air.

Strainers fitted with fine-mesh gauze (54 meshes per linear inch) are favoured by many beekeepers as they effectively clear warm honey of most foreign matter. A dual strainer or a number of simple strainers are used; as each one becomes clogged with wax particles it should be replaced by a clean one for best results.

Scum

Honey should stand in tanks for at least three days after extraction to allow any fine air bubbles, small pollen grains, and particles of wax which may have escaped through the strainer to rise to the surface. This scum should be thoroughly skimmed off daily until all foreign matter has ceased to rise.

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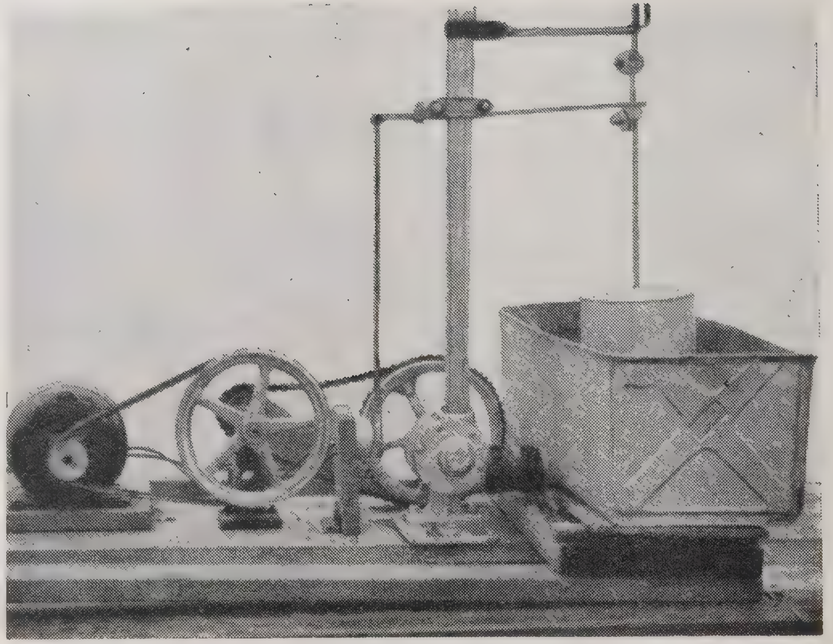
Froth

Where a layer of clean froth (as distinct from scum) is present on packed honey it shows that the honey has been subjected to some incorrect method of handling.

An excess of froth may be brought about either by churning minute air bubbles into the honey by the misuse of the honey pump, or by incorrect straining.

Where a honey pump is used, it is necessary that the speed should not exceed more than 60 revolutions per minute; speed in excess of this will cause undesirable whipping of the honey. It is also important for the pump to operate only when there is sufficient honey in the extractor or tank to provide a full pumping load. When the inflow of honey to the pump gets below its capacity, the pump starts to churn air into the honey. To avoid this, the pump should be stopped immediately, for which purpose a loose pulley on the pump, or an automatic switching arrangement, is essential.



An efficient honey pump. This system incorporates an automatic cut-off that effectively controls the operation of the pump and always provides a correct pumping load.

The pumping system illustrated incorporates a simple type of automatic "cut-off" that will effectively control the operation of the pump and always provide a correct pumping load. Honey from the extractor flows directly into the sump and, as the honey level rises, the float is also raised until its pressure on the rods connected to the switch toggle is sufficient to "switch on" the motor, as shown in the illustration. When the honey level has subsided—to within 1in. of the outlet to the pump—the float will also have descended and the downward pressure of the float will cause the motor to be "switched off." The sump illustrated is made with two 60lb. tins soldered together lengthwise, and the float is an airtight 5lb. honey tin.

Grain

Honey that has been warmed may be slow in granulating; as slow granulation results in a coarse- or gritty-grained product, a fine-grained "starter" should be thoroughly stirred into the honey before any natural granulation starts.

The starter honey is prepared by mixing a small quantity of fine-grained honey with liquid honey until the mixture is creamy and will run out of the receptacle. This is then stirred into the honey—about 60lb. to 120lb. of starter to each ton of honey—until the whole has been thoroughly mixed.

A fine-grained or "smooth" honey is always preferred for table purposes, while a sugary grain will spoil the value of an otherwise excellent honey.

Containers

Where honey containers are made of poor material, or the "tinning" is faulty, there may be considerable loss to the producer. When such tins are filled so that the honey is squeezed up against the raw edge of a lid, or penetrates the interstices of the tinning, a black discoloration occurs. This is sometimes sufficiently unsightly to make the honey look objectionable. It is important that honey is packed only in good-quality containers.

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Housing and Care of Harvesting Machinery

By K. M. MONTGOMERY, *Fields Instructor, Te Kuiti.*

THE present high cost of farming machinery emphasises the importance of preserving it in a good state of repair, and particular attention should be paid to the housing of harvesting machinery on dairy farms.

IT is interesting to note the introduction of and improvement in different types of harvesting machinery used on agricultural and pastoral farms since the pioneers landed in this country. The early settlers had to scythe their crops and thresh the grain with flails. Later the mower was introduced, followed by the side delivery, then the reaper and wire binder, which in turn gave way to the string binder. Today, in those districts where climatic conditions allow the crops to finish ripening while still standing, the header harvester has largely replaced the reaper and binder.

The amount of capital invested in harvesting machinery varies considerably according to the type of farming practised. On an agricultural farm where grain is grown harvesting equipment might be valued at anything from £200 to £2,000, while on a pastoral farm the investment might be valued from £100 to £500. Over the past few years there has been not only a steady rise in prices but a corresponding improvement in the design and quality of the parts; for example, ball and roller bearings have replaced brass or bronze bushings, and all these improvements call for greater care of the plant.

Adequate Housing

As a rule harvesting machinery is idle for some nine or ten months of the year, and unless it is properly housed greater deterioration can take place during this period than during the two months or so it is in operation. It is not an uncommon sight to see a mower or hayrake, and even a reaper and binder, pushed in under the trees to deteriorate from the ravages of rust and to become a fowl perch for the winter. It is hard to understand that in this country, where all our expensive machinery has to be imported, greater consideration is not given to the provision of adequate housing for this machinery. A reasonably waterproof shed of sufficient size is all that is required.

For the average dairy farm where a rake, mower, two sweeps, and a dismantled stacker have to be housed, a shed built of 9in. x ¾in. rough-sawn weatherboard and fibrolite roof, 20ft. x 15ft. with earth floor, 9ft. stud at the front and 7ft. 6in. at back can be erected for approximately £65, and as a lean-to to an existing building for £45. These figures were quoted to the writer by a contractor, but if the farmer buys the material and erects the building himself, a considerable saving can be made. However, on the contractor's figures, this means that a shed of the above dimensions would cost the farmer for interest and sinking fund not more than £5 5s. per annum over a 30-year period; or £3 12s. 6d. per annum for the lean-to.

The expenditure of £5 5s. per annum to house the harvesting machinery on an average dairy farm is well worth while, because the depreciation of implements lying in the open is very great and their efficiency is gravely impaired by such a practice.

In considering the question of erecting a building to house the harvesting machinery it must be borne in mind that during the year other chattels will be stored in the shed, and therefore the full cost of the building should not be loaded against the machinery.

Care Before Storage

Before stowing the machinery away the prudent farmer effects any repairs necessary. It is easier to remember what repairs are required at the conclusion of harvest than in nine months' time. To economise space shafts should be removed from the rake and the pole from the mower. Even if it is not intended to remove the shafts or pole, provision should be made to see that the ends are not resting on the ground, more especially if they protrude beyond the shelter of the roof. The knife should be removed from the cutter bar, and, after replacing any damaged sections, it should be thoroughly greased and placed in a safe position. It is not the usual practice to dismantle a "high lift" or heavily-built wooden tripod type of stacker, but to leave it in a corner of the yard or field. Left out to the sun the timber soon opens up, water gains access, and in a few years rotting of the timber has rendered the stacker unsafe for use without extensive, and nowadays expensive, repairs. When it is necessary to leave plant containing much timber out in the open it should be given the necessary protection by a liberal coat of good paint. Care should be taken to work the paint well into the joints, as it is here that rotting will set in quickest.

The cost of depreciation on implements left to rust in the open like this is more expensive than the provision of adequate housing.

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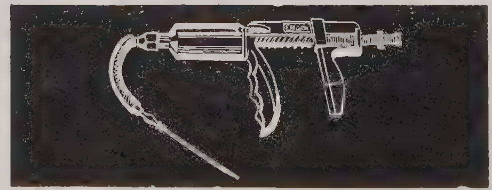

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YOUNG FARMERS' CLUBS

CLUB SECRETARIAL DUTIES

HINTS ON EVOLVING A SYSTEM

IT is generally agreed that a secretary should be seen and not heard, and this applies to a Young Farmers' Club secretary as much as anyone. He has the unenviable task of being largely responsible for the efficiency of his club, but often has to be satisfied with very little recognition. An active club will have a lot of business to transact, which usually falls upon the club secretary, generally entailing a great deal of correspondence, and the work is liable to pile up until the poor man is "snowed under"! The writer, who has had that experience, has evolved a system which he has found works well and helps to lighten his task, and hopes the following hints will be of help to those placed in similar circumstances.

Unidentified Soldier

Y.F.C. members are particularly requested to read the information on page 235 of this issue about an unidentified soldier, believed to be a New Zealander, and at present in the United Kingdom suffering from loss of memory. As he appears to have been a farmer, possibly in the North Auckland district, and comments in a notebook on articles in the "Journal," it is thought that young farmers may be able to furnish the police with some clue to his identity.

In the first place each club should have a complete record of all its meetings, business, correspondence, etc. It is a mistake to imagine that this means a pile of papers that get progressively more untidy and tattered until they have little or no use, for such records are very definitely of value, especially as the office of secretary is not permanent. When the writer had occasion to compile a history of his club he found that club records were non-existent and he had to go elsewhere for the information he required.

I have found that a very satisfactory method of handling the business of the club is to keep at least three files—one for correspondence; one for circulars, records of meetings, new membership forms, club membership rolls, debating results, etc. (if necessary this can be split up into two or more, as convenient); and one for blank forms, to keep them tidy. All official correspondence should be done on the stationery obtained from the federation, and carbon copies of the letters made on the blank sheet provided, and placed on the correspondence file for reference. In this way the secretary can keep a record of all club correspondence, and produce it as a proof that he has done his job, should occasion arise! I also suggest that the secretary obtains the addresses and if possible the telephone numbers of secretaries of all clubs in his district, so that if he needs them he will not have to worry his district secretary.

Keeping the minute book takes a lot of time, for while easy and convenient methods may be found to lessen the work, the only correct minutes, as acceptable in a court of law, are those written or typed on to the pages of a minute book.

Where the secretary furnishes reports of club activities to the local Press, it is a good plan to keep cuttings from the paper and append them to the minutes of the relevent meeting. A copy of the agenda could also be inserted, to assist in referring to the business of a previous meeting. If the secretary is keen on his job he will not begrudge the time this takes, especially if he feels that others in the club fully appreciate what he is doing. In this respect it is a great help to have an assistant secretary elected at the annual meeting, so that during a particularly busy time the harassed secretary has the help of a "second-in-command." Unless a club is very small, it is not a fair thing to expect the secretary to undertake the job of treasurer as well.

It is hoped that these few items will be of interest to clubs, and particularly to their secretaries, who often have a very thankless task and deserve every assistance available. The writer makes no claim that his system is infallible, and would welcome any suggestions or amendments from other club secretaries. A typewriter is of course very useful if it can be used with a fair amount of proficiency, as it simplifies the taking of carbon copies. District secretaries and other officers of the Y.F.C. Federation would doubtless be extremely thankful if all club secretaries attended to their correspondence and other matters in a methodical and businesslike manner. It is as well to remember that the majority of these officers are helping us gratis, and therefore deserve every consideration that we are able to give them.

—MALCOLM F. GRAY, Hon. Secretary,
Marton Y.F.C.

Enfield Club's Field Day

THE Enfield Young Farmers' Club held a field day recently in the Hakataramea Valley, 50 miles inland from Oamaru. The members turned out in good numbers, and were accompanied by the district Y.F.C. secretary, Mr. T. A. Sellwood, Department of Agriculture, Oamaru.

Three farms were visited during the day, the first being that of Mr. A. Hayes, where members were shown a new type of lucerne imported from Australia. Stands of H1 ryegrass and paddocks of Montgomery red clover were also inspected. A feature of this farm is the working men's quarters, which are particularly good, containing all conveniences and capable of accommodating a large number of men. The water scheme and the farm machinery were also inspected, and proved of great interest.

After dinner the party visited Mr. George Grant's farm. Mr. Grant described his method of making concrete posts and strainers. The machinery was inspected, the party then being shown over paddocks of Cross 7 and Dreadnought wheat, white clover and ryegrass pastures, and the lucerne stand. Mr. Grant, who is a sound, practical farmer, gave the members some very good advice on many phases of farming.

At Mr. F. McCaw's property, "Windsor Downs," an item of particular interest was the sweet clover, which some members mistook for "giant lucerne"! Some of the clover had been cut for hay and baled with the new type of automatic baler. Excellent crops of Cross 7 wheat and ryegrass were also seen. In one paddock wheat had been sown after surface cultivation only, and was making good progress. The members took a great deal of interest in the machinery and tractors on this farm, and in the repair workshop, which is capable of handling any repair work on the farm, its equipment being vast and varied, ranging from small spanners to pressure pumps and welding plants. Afternoon tea was served, and the party returned by bus to Oamaru, after a very instructive and enjoyable day.

The thanks of the club are due to Messrs. Hayes, Grant, and McCaw, who spared no effort to make the field day a success, and also to the driver of the bus.

—W. J. McCLEA, hon. secretary,
Enfield Y.F.C.

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Safe Operation of Farm Tractors

(This article is reproduced from a radio talk prepared and broadcast by members of the Bulls Young Farmers' Club in the Y.F.C. session from 2ZA, Palmerston North).

THE safe and efficient operation of a farm tractor calls for a great deal more skill and experience than is, perhaps, generally appreciated. Statistics of farm accidents taken over five years record deaths by tractors to be two in 1939, four in 1940, two in 1941, four in 1942—and in 1943 **eight deaths were recorded.** Additional non-fatal accidents have caused much suffering and often permanent disabilities and monetary losses. The eight deaths in 1943 constitute a 100 per cent. increase on any previous year. A portion of this increase may, perhaps, be attributed to the more extensive use of tractors, but the fact that most of our experienced tractor drivers were at that time in the Armed Forces and that farm tractors were being operated by persons often with little or no previous experience must also be taken into account. It is to the inexperienced driver especially that the following advice should be of benefit and value.

Skilled Occupation

Tractor driving can be termed without hesitation a skilled occupation, and those with no previous experience should consider themselves apprentices, and not delude themselves that after a week at the wheel they are thoroughly familiar with their particular machine; over-confidence is the greatest cause of all accidents.

The first hazard of a tractor is its kick. If the magneto drive clicks when it is turned over by hand it has an impulse coupling. If not, the spark should be fully retarded when starting, and the crank gripped with the thumb lying the same way as the fingers.

Don't suppose that because you are a "wizard" at the wheel of your car you are a fully-fledged tractor driver. You have a stout-hearted team at your command, and you will, almost without exception, be hitched to an implement or trailer—which makes all the difference. The greatest degree of alertness and precision in judgment is required at all times. You will need to watch where your tractor is going, how the implement is operating, continually rechecking and always preparing for a quick stop should obstruction be encountered.

Careful operation of the clutch is at all times essential for the safety of yourself and fellow-workers. Most tractors are controlled through a very sensitive governor, and, unlike a car, will not simply stall if the clutch is suddenly engaged. When hitched to heavy loads these sudden "take-offs" will often cause the tractor to lift in front, even to the point of coming right over backwards on the driver. This point cannot be over-emphasised. When hauling up a grade it becomes necessary to drop to a lower gear. Quick but **smooth** operation of the clutch will prevent the tractor rearing or careering backwards down the hill. Always select the desired gear before encountering the grade. If there is any chance of the front lifting, you should watch it continuously, and at the first sign of the front wheels leaving the ground disengage (or throw) the clutch, and they will settle back. Watch the front—don't be caught off guard.

Rearing and Lifting

The type of drive is often held responsible for tractors rearing and for some tractors lifting more easily than others. When the traction and a heavy load prevent the driving wheels from rotating, the motor has a tendency to swing itself around the shaft of the held wheels like a lever turning about a fulcrum. This tendency, present in all powered vehicles, is called torque, and is of course normally prevented by the weight of the engine and the distance of that weight from the fulcrum, which in this case is the rear axle.

The tendency of a tractor to rear depends on: 1. Power in relation to weight. 2. Position of weight in relation to rear axle. 3. Hitch of the tractor in relation to distance below rear axle.

Neither the type of final drive nor the hitch forward of the rear axle has any influence on tractors rearing over backwards. When difficulty with rearing is experienced a quick and effective remedy is to attach a 1cwt. coil of wire to the front of the tractor. It will not restrict the radiator to any extent, besides being as compact as anything of its weight about the farm, and easily removed on reaching easy going again.

Fewer accidents arise from tractors rolling over sideways than from their coming over backwards, but the possibility of their rolling sideways must be considered not only on hillside work but on flat ground. On steep sidelings speed must be reduced to a crawl, and all attention focused on the behaviour of the tractor and the "lay" of the land ahead. Holes and bumps in the track should not be blundered through at a speed that causes a sharp jolt. Turning sharply or applying one wheel brake while travelling at high speed may cause capsizing on level ground, and if rough ground is taken at high speed there is danger of losing control of steering or being thrown off the tractor.

Haphazard Hitching

Hitching the tractor to implement, trailer, or snig is one of the most frequent causes of accident: Many drivers back their tractors "somewhere near," and, half dismounting, keep one foot on the clutch so that the tractor may be backed while the drawbar is raised to the correct level. If all goes well the pin is dropped and the driver clambers safely back to his seat, to live a little longer and repeat the performance at a future date—sometimes setting a bad example for a younger man. Sooner or later, however, he will slip, lose his balance, even fall over, and the tractor will come back and crush him against the implement. Tractor drivers who do this are courting certain death.

Many implements can be easily and safely hitched with the aid of a 2 or 3ft. piece of ⅜in. rod with a large hook in one end for picking up the drawbar. Such a hook is worthy of a special place on the tractor. Heavy drawbars can be safely hitched only by dismounting after placing the tractor in the exact position or by summoning assistance if necessary.

Implements, trailers, or snigs should be tried out for turning by making full-lock turns each way, watching how close the drawbar or chain comes to the wheel. Adjustments to the length of chains will often prevent the wheel from catching. Many accidents are caused through the wheel catching the implement on a turn and pulling it up on top of the tractor and its driver. Sledges are very liable to run up on to the tractor. Three times as much can be pulled on a trailer behind a tractor than with a sledge. Fully 90 per cent. of sledges should be replaced by trailers, to pull which much less fuel is required. However, if conditions demand a sledge, a good rigid drawbar that will hold the sledge off the tractor at all times is a better means of drawing it than chains.

Assistants and Children

When working with an assistant the driver must look out for his safety, but assistants should not depend entirely on this—**they should look after themselves.**

Tractors attract children, whose lives and possibly that of the driver are endangered when children are allowed to ride on tractors or implements. Each year brings fresh tragedy of children involved in accidents with farm machinery, and parents should do what is in **their power alone** to prevent any such tragedies in the future.

The power take-off shaft leading from the tractor to power implements should always be fitted with the special guards for this purpose, otherwise there is great danger of the revolving shaft catching clothing. Tractor drivers should never wear long, and perhaps torn, overcoats that may blow out and catch in the wheel. Close-fitting, warm, stormproof jackets are safer, and give all the freedom required, while leggings provide warmth and protection for the legs.

Safety Rules

To summarise:

Don't grip the crank handle with thumb around to meet the fingers.

Don't try to jerk a heavy load away, especially when going up hill; weight the tractor in front when doing heavy or steep work.

Don't make sharp turns or use one wheel brake when travelling at high speed.

Don't under any circumstances try to operate the clutch while standing on the ground.

Don't allow anyone to ride on the tractor.

Don't attempt to make adjustments to the engine by leaning forward while the tractor is in motion.

Don't crawl back to reach levers on the implements while the tractor is in motion.

Don't use a sledge behind a tractor when a trailer is available.

Keep a sharp look-out for holes and bumps when on steep hillside work. Travel slowly over rough ground. When two men are engaged in mowing, the **tractor driver** should dismount to clear the knife.

Finally, don't neglect running repairs, as breakages are not only costly but dangerous.

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Cheviot Club's Field Day

THE Cheviot Young Farmers' Club held a successful field day in the Spotswood district recently. The members assembled at Mr. J. Beckett's farm, where an attractive line of Southdown cross fat lambs was inspected, and also the up-to-date milking shed and high-pressure water supply plant. A paddock of white clover grown from Government Stock seed was also seen; Mr. Beckett mentioned the difficulty experienced last season in harvesting the clover, owing to its prolific growth.

Mr. E. G. Smith, Department of Agriculture, addressed the party on the merits of Certified white clover and the methods of establishing good ryegrass and white clover pastures. In a paddock of perennial ryegrass Mr. Smith explained how the larva of a fly called the "wheat-sheath" miner, by sucking the stems of ryegrass plants, caused the white heads so frequently seen last year in crops of ryegrass. He also spoke on the value of first-class pastures as the cheapest means of building up the fertility of the soil. Mr. and Mrs. Beckett provided morning tea and were thanked for their hospitality by Mr. T. Stevenson on behalf of the visitors.

On Mr. J. B. Stevenson's property, the party inspected paddocks of Government Stock perennial ryegrass, pedigree white clover, and subterranean clover. On another part of the farm crops of perennial ryegrass and Government Stock white clover were seen, and also a high-yielding stand of lucerne and a paddock of Hunter's wheat.

After luncheon in the Spotswood Hall the party proceeded to Mr. U. Kelly's farm, where an automatic pick-up hay baler was working. Members were favourably impressed by this modern labour-saving machine.

At Mr. A. E. Page's property crops of Montgomery red clover, perennial ryegrass, and peas were inspected. Favourable comment was passed on a paddock of perennial ryegrass and white clover which had been down for a number of years. River protection work and a paddock of Montgomery red clover were viewed on Mr. P. A. Barnes's farm. Members were greatly impressed not only by Mr. Barnes's efforts over a period of years to prevent the Waiau River from encroaching further on his property, but also by the magnitude of the task of preventing the erosion of a large area of good land.

During afternoon tea at the Spotswood Hall the chairman of the club, H. M. Cooper, thanked owners of the farms visited for all they had done to make the field day so interesting and enjoyable. Mr. Smith said that the splendid attendance at the field day and the keenness displayed by members in attending club meetings and functions showed that the value of the Young Farmers' Clubs movement was fully realised. The district Y.F.C. secretary, Mr. E. C. Withell, congratulated the club on its field day, and stated that arrangements were in hand for a combined district field day, when the irrigation scheme in Mid-Canterbury would be inspected. Strong support for this activity was indicated from other clubs in the district, and judging from the number of members who had signified their intention to attend, the Cheviot Club would be well represented.

ANNUAL MEETINGS

Clubs and District Meetings

CLUB secretaries and chairmen are reminded that the annual meetings of clubs should be held during March. Reports of meetings should be prepared on the correct form (Y.F.C. 5) and sent in duplicate to the district secretary, who will forward one copy to the Dominion Organising Secretary. These reports should contain the names and addresses of officers elected, number of members present, etc., and, if possible, copies of clubs' annual reports and balance sheets.

As soon as possible after their annual meetings club secretaries should send in through their district secretaries, on form Y.F.C. 4, a revised list of club members, giving full postal addresses. These lists are required for "Journal" distribution purposes, and also in order that a complete membership roll of the organisation can be kept. Copies of the "Journal of Agriculture" will be posted monthly to all active members whose names and addresses appear on these lists; advisory members are not included as "active" members, and are thus not entitled to receive the "Journal" at the Y.F.C. concession rate. "Journal" subscriptions of club members expire with the April number, and to ensure that members receive their monthly copies promptly it is necessary for the new membership lists to be sent in as early as possible. The name and address of **every member** should be included, as **all** active Y.F.C. members are automatically subscribers to the "Journal"; members pay their club subscription of 3s. 6d. per annum, and the club is responsible for the "Journal" subscription at the Y.F.C. concession rate of 1s. per annum.

Note: All Y.F.C. forms for reports of meetings, field days, etc., membership rolls, and enrolment forms are available on application to district secretaries.

District General Meetings

The annual district general meetings should be held during April, followed by the annual meetings of the four councils during May. This arrangement is necessary to provide a continuity of annual meetings—first those of the clubs, then the districts, followed by those of the councils, enabling delegates to be appointed in correct order, and any important business to be passed on from one body to another, in readiness for the annual general meeting of the federation in June.

Club and district officials should read the Y.F.C. constitution carefully to make themselves familiar with the procedure in the election of their respective officers.

Y.F.C. Land Settlement

Mr. L. W. McCaskill, convener of the special Y.F.C. land settlement committee, sends the following message to Y.F.C. members:

AT the last annual general meeting of the Y.F.C. Federation in Hamilton in June, 1945, it was decided that an investigation should be made into the problem of settling our members on the land.

I was appointed convener of the committee charged with the investigation, and I wish to express my gratitude to those 125 members who replied to the circular sent out in August last. This number, however, is not sufficient to give us a complete picture of our problem. The committee has therefore decided to make an attempt to obtain a reply from every member of every club within the organisation. Very shortly you will receive a circular asking for information. It is most desirable that every member answers all the questions applicable to him, but in addition I ask you all to pay particular attention to the last question. This requests you to give the committee, and therefore the whole movement, the benefit of any ideas you may have as to how young farmers could be settled on the land.

Land settlement is your major problem. Please assist us to help you in this attempt to solve it.

**—L. W. McCaskill, Lincoln College,
P.B., Christchurch.**

Obituary

DR. W. S. HILL

THE Y.F.C. movement, especially in the Auckland area, has lost a firm friend and supporter by the death of Dr. W. S. Hill, B.Agr., Ph.D., on December 29, 1945.

The late Dr. Hill was born in Auckland and educated at King's College, where he was dux and head prefect in 1906. He was a gold medallist at Canterbury Agricultural College, Lincoln, and was the first in New Zealand to gain the degree of B.Agr., which was conferred on him in 1913. He received the degree of Doctor of Philosophy in 1929 for the publication of his work on lucerne.

In the first World War he rose to the rank of captain. In 1916 he was appointed farming instructor to New Zealand soldiers at Hornchurch, Essex, England. At the conclusion of hostilities he continued his studies at Rothamstead Experimental Farm, and returned to New Zealand in 1920.

After taking up farming for a short period he was appointed agricultural instructor to the Seddon Memorial Technical College, Auckland, leaving there to take up a similar post at the Otahuhu Technical College in 1935, and remaining there until just before his death.

He early realised the value of the Y.F.C. movement, and formed the first club to be established in New Zealand in 1932 among his agricultural pupils. This club, known as the Auckland Young Farmers' Club, has today a membership of over 90, all pupils of the Otahuhu Technical School, and it still retains its original constitution. Although this club has never become affiliated to the N.Z. Y.F.C. Federation, the late Dr. Hill always took a keen interest in the work of the Y.F.C. movement, giving many lectures to clubs in the Auckland area. He was also largely responsible for the formation of the East Tamaki Young Farmers' Club, which is one of the strongest and most active clubs in the Auckland district.

—L. W. GUBB, Chairman,
East Tamaki Y.F.C.

Marton Y.F.C. Sponsors District Sports

TO raise funds for the Y.F.C. National Memorial the Marton Club decided to hold a sports meeting similar to others held in the district. It was thought that if the fixture could take place before the Marton District A. and P. Show, it would attract a large number of horses from a fairly wide area, and Saturday, January 19, was selected, the committee approaching Mr. K. McK. Duncan to see if he would assist. Mr. Duncan was very enthusiastic, and not only made his farm available, but entered so wholeheartedly into the scheme that it is safe to say that without his enthusiastic aid the venture would not have met with much success.

It was only when the committee members got really down to business that they realised just how much work such a meeting entailed, but after a few headaches and a lot of last-minute arrangements things were straightened out. As this was a first effort, it was found necessary to canvass the district for trophies, and this proved to be far more successful than it was pleasant to those who had to do the canvassing. The club secured the willing co-operation of many local residents, and is very deeply indebted to them for their assistance. Members of the committee who purchased the trophies are to be congratulated, as many favourable comments were heard on the day about the fine set of trophies.

The officials were:—Patron: Mr. K. McK. Duncan. Horse events: Messrs. D. G. Paterson, J. A. Lampp, D. R. McFarlane, and A. P. McDonald. Novelty events: Messrs. H. R. Miller and G. E. Lampp. Children's races: Messrs. M. C. Amadio, C. W. Stafford, H. G. Stodart, and K. H. Smith. Sheep guessing: W. B. Gray and W. E. Shield. Refreshment stall: Mrs. A. C. Vile, Mrs. Amadio, Misses Lorna Paterson, Pat and Beth Vile, and others. Secretary: M. F. Gray, assisted by A. L. Vile. Members of the club assisted in many other ways.

Broadcasting arrangements were in the hands of Mr. A. R. Down, and to facilitate rapid announcing of results and also to call up the competitors for each event a telephone was installed in the secretary's tent.

Although heavy rain commenced about 5.30 a.m. and by 9 a.m. ¾in. had fallen, by noon the day was perfect. Unfortunately many people were discouraged, especially by a very heavy downpour in Marton about 11 a.m. On the grounds, however, this was just a light skiff. Six weddings in the district were another counter-attraction, but despite these disadvantages the day was a great success, promising well for the future, when it is hoped to run some athletic events, especially competitions for Young Farmers' Clubs.

The following were the results:—

Maiden Pony—Jim Bull's Lady Gay 1, Margaret Duncan's Bo Peep 2, Alison Duncan's Freckles 3.

Small Pony—F. Coleman's Mickey 1, Faith and Christine Duncan's Boy Blue 2, Prudence Wilson's Tiptoes 3.

Medium Pony—Tom Duncan's Munga 1, M. Bull's Lin 2, Derek Wilson's Nuri 3.

Big Pony—T. Duncan's Jackie 1, Don Hammond's Pompey 2, Doreen Hammond's Banjo 3.

Best Girl Rider—A. Duncan 1, Margaret Bull 2, Susie Duncan 3.

Best Girl Rider, senior—Jean England 1, M. Duncan 2, D. Hammond 3.

Best Boy Rider—Stuart McGregor 1, D. Wilson 2, George Simpson 3.

Best Boy Rider, senior—J. Bull 1, T. Duncan 2, Alan Mowbray 3.

Champion Pony—T. Duncan's Jackie 1, J. Bull's Lady Gay, v.h.c.

Consolation Pony—June Hammond's Mickey 1, Judy Bull's Gipsy 2, John England's King 3.

Maiden Hack—Doreen Paterson's Spiro 1, Betty Kilmister's Prince 2, Joan Bull's Paddy 3.

Gent's Hack—D. Paterson's Spiro 1, G. Bull's Barney 2, J. Bull's Paddy 3.

Lady's Hack - Mrs. R. K. Simpson's Sergeant Dan 1, F. McLean's Torquay 2, June Hammond's Ratanui 3.

Shepherd's Hack—L. Rowe's Nairobi 1, Betty McLean's Robin Hood 2, G. Bull's Barney 3.

Champion Hack—Mrs. Simpson's Sergeant Dan.

Pair Hacks—Mrs. R. S. Fullerton-Smith's Royal Crest and Betty Kilmister's Prince 1, G. Bull's Barney and L. Rowe's Nairobi 2, Mrs. E. Duncan's Laughing Duchess and Doreen Paterson's Spiro 3.

Maiden Jump—J. Bull's Paddy 1, K. McK. Duncan's Vernon 2, D. Hammond's Ruben 3.

Maiden Pony Jump—M. Duncan's Bo Peep 1, J. Bull's Gipsy 2, June Hammond's Ratanui 3.

Improver's Jump—Mrs. Fullerton-Smith's Royal Crest 1, L. Rowe's Radiant Star 2, L. Rowe's Nairobi 3.

Improver's Pony Jump—J. Bull's Gipsy 1, M. Duncan's Bo Peep 2, T. Duncan's Munga 3.

Open Pony Jump—T. Duncan's Jackie 1, D. Hammond's Pompey 2, J. Lourie's Hinemoa 3.

Open Jump—Mrs. Fullerton-Smith's Royal Crest 1, T. Duncan's Jackie 2, R. Hartley's Lucky Minstrel 3.

Lady's Jump—D. Hammond's entry 1, Mrs. Fullerton-Smith's Royal Crest 2, L. Rowe's Radiant Star 3.

Pairs Jump—J. Goodwin's Ship Ahoy and L. Rowe's Radiant Star 1, E. Duncan's Old Joe and Laughing Duchess 2.

Consolation Pony Jump—J. Bull's Lady Gay 1, A. Mowbray's Toby 2, J. Hammond's Tim 3.

String Jump—Mrs. Simpson's Eileen 1, J. Bull's Paddy 2, T. Duncan's Jackie 3.

Bending Competition—J. Bull's Gipsy 1, M. Bull's Tui 2, Joyce Morrison's Rajah 3.

Consolation Jump—E. Duncan's Old Joe 1, R. Hartley's Lucky Minstrel 2, Mrs. Simpson's Eileen 3.

Women's Nail Driving (3in. nail)—Miss R. Eustage 1, Mrs. D. Oldfield 2.

Men's Nail Driving (4in. nail)—R. Still 1, D. I. Morrison 2.

Chain Stepping—J. Morgan.

Sheaf Tossing (12lb. sheaf)—T. Hartley 1, H. Pitt 2.

Sheep Guessing, liveweight (93½lb.)—I. Stewart 93lb., and J. Barton 94lb., equal 1.

Shortly before the conclusion of the sports the vice-chairman of the club, G. E. Gordon, in the absence of the chairman, M. M. Marshall (who was representing Rangitikei in a cricket match for the Hawke Cup in Masterton) thanked all present for helping to make the day a success, and also Mr. and Mrs. Duncan and many others without whose assistance the day would have been well-nigh impossible. As a result of the activity quite a handsome sum will be available for the Y.F.C. Memorial Fund.

In the evening a dance was arranged in the Upper Tutaenui Hall by a special committee of three club members—H. G. Stodart, J. C. Coleman, and J. A. Caithness. The evening was an outstanding success, the attendance being very good. The orchestra consisted of Mrs. Elmes (Bulls) piano; Messrs. J. F. Thorby (Bulls Y.F.C.) cornet; K. Gilbert (Marton) string bass, W. L. Faull (Marton) drums, assisted by Mr. Coleman, Marton Y.F.C., with his cornet. A Monte Carlo was won by Mr. Graeme Gordon and Miss Doreen Paterson, and an extra was played by Mr. G. Bartlett, Hunterville Y.F.C. Mr. M. F. Gray acted as M.C.

The club hopes that it will be able to run such meetings annually in future.

—MALCOLM F. GRAY Hon. Secretary,
Marton Y.F.C.

Reports on Club Activities

DUNEDIN

Palmerston.—Business meeting; final arrangements for the Palmerston-Dunback field day. Eleven members present out of 31.

WESTLAND

Koiterangi-Kokatahi.—General discussion on "Modern Piggeries." Six members present out of 14.

NELSON

Murchison.—Business meeting. Delegates to district committee elected as follows: Mr. R. Thomson (advisory member); L. Lynch and J. Horner (active members). Twenty-five present out of 47.

HOROWHENUA

Levin.—Programme of future lecturers discussed. Address by Mr. R. H. Long, B.V.Sc., on conditions prevailing in Australia before his departure for New Zealand. Nineteen members present out of 35.

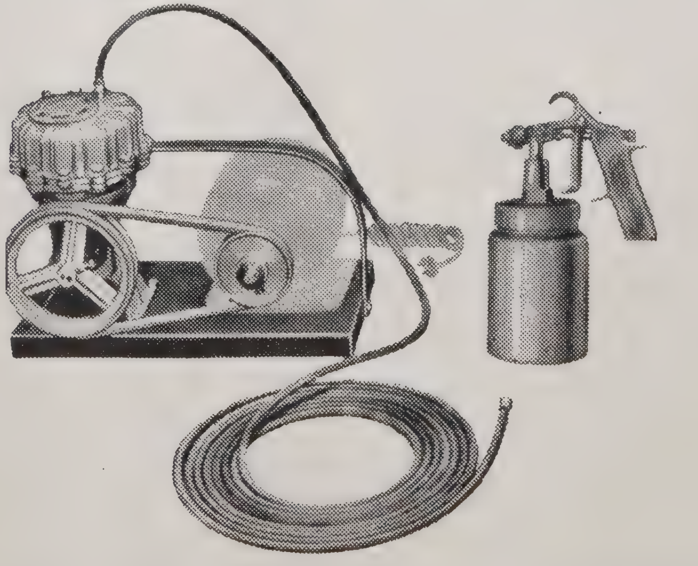
Otaki.—Club recently revived with an initial membership of 17. Officers elected: Advisory president, Mr. C. C. Holmes; chairman, R. Hillas; secretary, P. Elliot; treasurer, Bruce Fogden; publicity agent, Frank Taylor. This club appears to have a strong potential membership. Messrs. J. M. Hopkins, district Y.F.C. secretary, and S. Freeman, Dominion Organising Secretary, were present.

MANAWATU

Apiti.—Business meeting. Final selection of stewards and judges for the show to be held in conjunction with the club's sports meeting. G. Doughty appointed chairman to replace I. Old, who has left the district. Attendance of 16 out of 35.

Colyton.—Discussion on forthcoming visit of the Minister of Agriculture to Palmerston North to meet combined groups of Y.F.C. members. Talk by N. Williamson, a member of the club, on "India—Its Farming Conditions and Methods of Living." Seventeen members present out of 20.

Rangiotu.—Report on club dance, showing profit of £10 16s. 9d. Discussion on forthcoming visit by Minister of Agriculture; district secretary to be notified that 10 members would attend the function to be held in Palmerston North. Proposal by the chairman that the club should organise a show approved and a preliminary syllabus drawn up, the show to be held on the first Saturday in April, and the various classes (exhibits, etc.) to be open for entry by all Y.F.C. members; there will also be "open" classes. Attendance of 10 members out of 17.



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Te Arakura.—Entries for the Y.F.C. sports meeting at Marton were invited. Series of sound films on agricultural and topical subjects exhibited by Mr. S. Freeman, Dominion Organising Secretary. Attendance of 12 members out of 18; 14 visitors also present.

WANGANUI

Bulls.—Business meeting. Report on recent meeting of district committee. The chairman thanked all who had helped to make the recent club ball such a great success; the profits from this function are to be devoted to the national Y.F.C. memorial fund, and it is understood that a substantial sum has been raised. Letter to be sent to C. B. Anderson congratulating him on gaining an overseas bursary.

Marton.—Business meeting. Discussion on circular from district secretary regarding future district activities. Arrangements for visit by Minister of Agriculture, who is meeting combined groups of members from clubs throughout the district. Letter from the Wellington Council secretary enquiring whether any returned member could write the script or supply the information for a radio talk on "Vegetable Growing in the Pacific" to be broadcast in the Y.F.C. weekly session from 2ZA, Palmerston North. Lengthy discussion on the coming gymkhana and many of the details arranged for working parties to erect the jumps, etc. This activity is being staged by the club to raise money for the national Y.F.C. memorial fund. Mr. S. G. Avery's recommendations regarding the Y.F.C. memorial read to the meeting. Final selection of stewards to assist at the Marton A. and P. Show. An endeavour to be made for club members to visit one of the Wanganui wool stores before the March appraisal. Two new members enrolled. Twenty-seven members present out of total of 43.

SOUTH TARANAKI

Alton.—Donation of 10/- to the local calf club. A combined meeting and social was held at which Mr. A. Hall made a presentation to C. Palmer on the occasion of his departure from the district. Full muster of 17 members.

NORTH TARANAKI

Oakura.—General business. Address by Mr. F. B. Blundell (advisory president) on "How to Conduct a Meeting." General discussion on the settling of young men on the land. Full attendance of 10 members.

Tikorangi.—Delegates selected to represent the club at the coming district meeting. Lecture by Mr. F. L. Knowles, advisory officer, N.Z. Dairy Board, on "Selecting the Herd Sire." Attendance of six out of 12.

Urenui.—Business meeting. Programme of activities arranged for coming three months. Discussion to be held by members on "The 40-hour Week as Applied to Farms." Arrangements for a dance. Recommendation to district committee that North Taranaki clubs hold a combined field day at a Jersey stud farm. Thirteen members present; this recently-revived club has increased its membership from 15 to 22.

WAIRARAPA

Carterton.—Farewell to the district secretary, Mr. G. S. Robinson (Department of Agriculture); his successor, Mr. W. V. Hadfield, introduced and welcomed. Arrangements for a field day at the Carterton show grounds; this will include stock-judging, etc., and also machinery demonstration. A trial "brains trust" went off very successfully; a longer one to be held at the next meeting. Attendance of only eight members out of 35.

Tinui.—This club has recently been revived. Officers elected: Advisory members, Messrs. Ian Speedy and Jas. Andrew; chairman, E. Bellis; secretary and treasurer, R. Carson. This club has good prospects, and should become one of the strongest in the Wairarapa; attendance of 30 at the initial meeting.

SOUTHERN HAWKE'S BAY

Woodville.—Report on club dance. Lecture by Mr. F. J. S. Holden, Department of Agriculture, on "Mole Draining." Eight members present out of 14.

CENTRAL HAWKE'S BAY

Hastings.—A vote of sympathy passed at a recent meeting to relatives of the following members of the club killed on active service: S. McGowan, E. Marshall, W. Hodgkinson, and F. Hildreth.

Waipukurau.—Election of new secretary. The Dominion Organising Secretary, Mr. S. Freeman, addressed the meeting on the aims, objects, and activities of the Y.F.C. movement. He also exhibited sound films on agricultural and topical subjects. Thirteen members present out of 19.

POVERTY BAY

Gisborne.—Arrangements for a field day at the Research Station, Manutuke. Impromptu speeches to be given at the next meeting. Members also to give talks on the "Aims and Objects of the Y.F.C. Movement, and how they Should be Carried Out." Prizes donated by Mr. G. V. Smith for the winners in two classes—over and under 20 years. Address by Mr. C. H. Williams on "Federated Farmers." Attendance of 24 out of total of 84.

TAUMARUNUI

Kaitieke.—Delegates appointed for district committee. Discussion on raising funds for the club. Election of auditor. Lecture by Mr. E. G. Stainton, Department of Agriculture, on "Soil Conservation—Casting Worms—and Lime." Eleven members present out of 16.

Ohura.—Social committee to arrange for a dance soon after the Ohura Show. Delegates advised of the district meeting to be held at Taumarunui. Mr. R. L. Cowie, manager, Bank of N.Z., Ohura, gave an instructive address on "Farm Finance," and answered numerous questions; a general discussion followed. Eleven present out of total of 22.

Taumarunui.—Stewards appointed to assist at forthcoming A. and P. Show. Judging teams from clubs in other districts to be invited to compete. Subscription list opened for national Y.F.C. memorial; over £9 collected at meeting. Report of Hamilton meeting of Auckland Y.F.C. Council. Members were asked a series of questions on farm topics; the resultant impromptu speeches were interesting and informative. Attendance of 15 members out of 27.

WAIKATO

Elstow.—Address on "How to Conduct a Meeting" by Mr. E. Pallaser, of Springdale. Twenty-two members present out of total of 24.

Hinuera.—Club debate, "Stripping v. Non-stripping," proved very interesting and successful, and was won by 291 points to 260 by the side supporting stripping.

Ngarua.—Arrangements for a club debate. Address on "Massey College" by Mr. R. A. Candy, chairman of Massey College board of directors. Thirty-five members present out of 42.

Springdale.—Business meeting; discussion on the holding of a club sports meeting on the Springdale Domain; the three neighbouring clubs to be invited to compete. Ten members present out of 18. A field day was held on Mr. W. J. Singer's property, Springdale; this took the form of a demonstration by Mr. Higgins on "Points to be Considered when Classifying a Dairy Cow." Thirteen members attended.

Waerenga.—Club debate, "That Stripping is more Profitable than Non-stripping." L. Holt led the affirmative team and L. Carter led the negative. The debating was spirited and the speeches well prepared. The judges, Messrs. Holt and W. J. Jefferies, awarded the decision to the affirmative by a narrow margin. Mr. Holt gave members some hints on debating. Thirty-two members present out of 46. Field day held on Mr. Rodgers's property, Ngaruawahia: Mr. Rodgers showed the members round his progressive stud pig farm, and spoke on pig husbandry generally. He stated that he found the flame-thrower ideal to eradicate germs in his all-concrete sties. In winter he feeds his pigs almost entirely on grain, a large part of which is "boiled" by passing steam through tanks on sledges in which the grain is contained. The open-cast colliery at Kimihia was also visited. There was an attendance of 25 at the field day.

THAMES

Ngatea.—Five new members enrolled. T. Chatterton elected vice-chairman. Advisory members appointed. Address by Mr. Robt. Burke, of Mangatarata, on "General Farming in Taranaki and the Hauraki Plains Many Years Ago." Attendance of 14 members out of 19.

WESTERN BAY OF PLENTY

Paengaroa.—One new member enrolled. Arrangements for annual athletic meeting left in hands of committee. One minute silence observed as a mark of respect to the memory of the late Mr. G. Spratt, sen., an advisory member of the club. Members prepared the hall for the Y.F.C. vice-versa and fancy dress dance the following night.

Te Puke.—Arrangements made for calf-judging competition. Informal talks by members present. Mr. G. Spratt gave a prize of 10/- for the best speaker, won by R. Griffin, who donated the prize to the club funds. Attendance of 15 out of 35.

Welcome Bay.—The chairman, J. Wright, reported on the recent club concert, and thanked all who had helped to make it a success. Mr. A. V. Allo, Department of Agriculture, gave a lantern lecture on "Silage." Seventeen members present out of 33. At the previous meeting the vice-chairman, S. Cooper, took the chair. Two new members were enrolled. J. Wright reported fully on the recent district field day at Te Puke. Mr. G. Crawford gave a very able demonstration of boxing and showed members some interesting jiu-jitsu holds. Twenty-two members present.

EASTERN BAY OF PLENTY

Thornton.—General business. One new member enrolled. Impromptu speeches by all members present. Attendance of 17 out of 40. A field day was held on Mr. W. Arbuckle's property; a stock-judging competition was held, the judge being Mr. Neil Carter; and Mr. F. Barwell, Supervisor, Bay of Plenty District Pig Council, gave an address on "The History of the Pig"; and demonstrated on a bacon pig and a boar, and made a post-mortem examination of a diseased pig. There was an attendance of 32 at the field day.

Waimana.—Business meeting. Stewards appointed for the Whakatane A. and P. Show: J. Marra, J. T. Cain, and D. Woolfield. Date fixed for annual meeting. Fourteen members present out of 30. At the previous meeting a lecture was given by Mr. F. Barwell, Supervisor, Bay of Plenty District Pig Council, on "The Evolution of the Pig; Materials for Flooring Sties; Sow Recording; and the Carcass Quality Scheme." Sixteen members present.

AUCKLAND

Clevedon.—Field day held at Alton Lodge. Demonstrations: Horses (Mr. Lindsay), and Ayrshire cattle (Mr. Weir). Twenty-seven members present out of 29.

Harrisville.—One new member enrolled. Report of the recent district committee meeting. Address by Sen. Sgt. Kelly on "The History of the Police Force." Attendance of 12 out of 23.

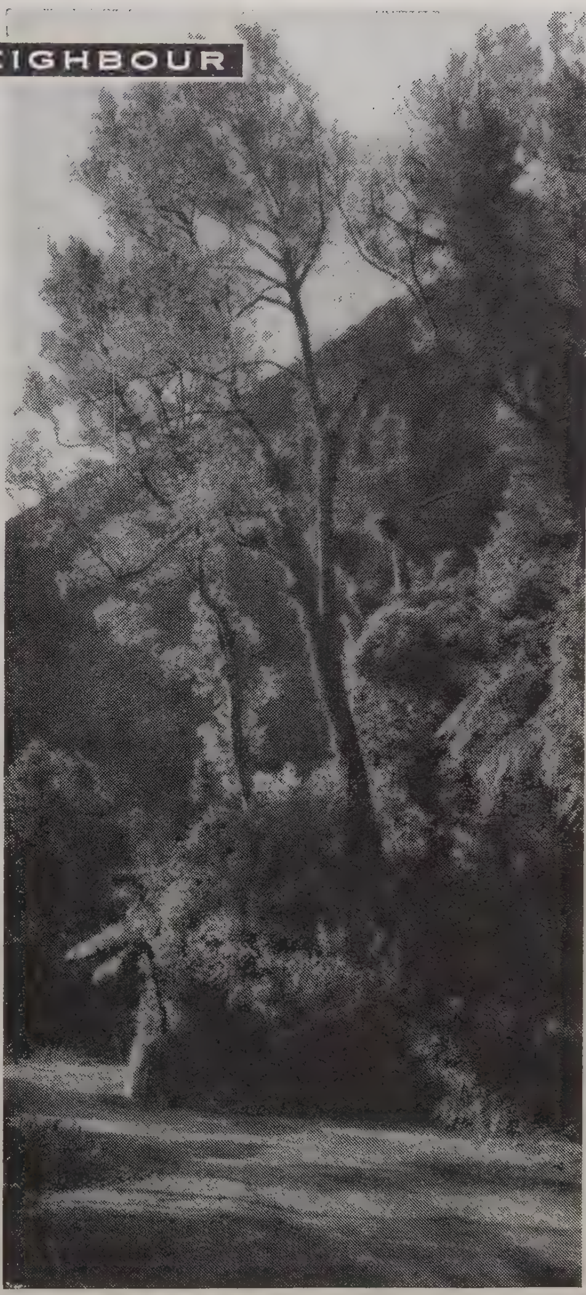
Pukekawa.—Two new members enrolled. Arrangements for a dance. Reports on recent dance and cricket match. Impromptu 5-minute speeches by all members present. Each member handed in a subject, these being drawn out of a hat by the speakers in succession. The following were the speakers and their subjects: W. Green ("North Auckland v. South Auckland for Farming"); A. Duthie ("Horses v. Tractors"); B. Logan ("What I Would Do if I Were an M.P."); R. Martin ("Pig Farming"); A. Upson ("What is the Best Season for Topdressing and Why"); B. Orr ("Hedges and Shelter Belts"); L. Stocks ("Pampas Grass"); R. Parker ("Should Girls be Allowed to Enter the Y.F.C. as Members?"); S. Brewster ("Mechanisation on Farms"); H. Geraghty ("The Progress of the Jersey Breed in N.Z."); H. Cathcart ("Superphosphate"); A. Miers ("Tobacco"); C. Ingham ("Transport"); S. Logan ("Irrigation"); K. McNeil ("Are Horses Better than Tractors?"); L. Barrett ("Water"). Attendance of 17 out of 25.

THE GOOD NEIGHBOUR

HILLS

Trees growing—right in front of my window;
The trees grow high and the leaves grow thick.
Sad alas! the distant mountain view,
Obscured by this, dimly shows between.
One morning I took knife and axe;
With my own hand I lopped the branches off.
Ten thousand leaves fall about my head;
A thousand hills come before my eyes.
Suddenly, as when clouds or mists break
And straight through, the blue sky appears
Again, like the face of a friend one has loved,
Seen at last after an age of parting.
First there came a gentle wind blowing;
One by one the birds flew back to the tree . . . .
It was not that I did not love the tender branches;
But better still—to see the green hills.

These lines were composed by the famous Chinese poet, Po Chu-i, whose regard for birds and trees and all growing things was deep and true, but who loved his native hills even more fervently. Although this poem was written centuries ago, many of us today will be in agreement with its sentiments.



To me, the sight of tranquil hills framed by tall trees is one of my earliest memories of beauty. It was only a short distance to the hills bordering the valley where I lived as a child. My room was high up under the eaves and had windows on two sides. Through the eastern dormer I could glimpse the first faint golden light of morning moving clockwise across the peaks, while from the wide-silled casement I had a view of the long sweep of the western hills right to where the land narrowed and the two ranges appeared to merge. Frequently, the mountains beyond were clearly visible, especially in the winter months when they were capped with sparkling snow. I was familiar with every crag and contour of those hills as seen from my eyrie with the setting sun silhouetting them against the skyline and sending streams of molten flame and rose spilling down the slopes. Sometimes I used to watch them drowsing in the noonday heat, cloaked in a haze so blue that people in the upper valley called them the Blue Mountains. I was aware of their every change of mood and garb. I noted when their filmy, cloud-grey scarves that betokened a grief of rain were flung aside for the green-embroidered garments and barbaric gorse-gold crown spring proffered so joyously. Often they would veil themselves in purple shadows at dusk's approach, only to hold court a few hours later in all the regal splendour of sable robes and diadem of stars.

In after years that upstairs room was utilised as a study, and whenever my eyes became tired I could rest them upon the high hills and return to my work with renewed energy in consequence. Tennis and kindred sports did not appeal to me nearly as much as tramping, and many a Saturday afternoon I spent happily exploring the great spurs I had seen from my window. Standing on some rocky crest I was able to scan the rise and fall of distant ranges—a veritable sea of hills extended before me.

I will never forget the day I was given the opportunity to make a home on a hill. Few possessions have afforded me keener pleasure than the ownership of that section of a hilltop where we now live. Admittedly, the road curves in a series of hairpin bends and climbs steeply most of the way, but the view is magnificent, and I would far rather be weary in body than in spirit, and I find this lovely vista of sea and sky and river-threaded valley a never-failing tonic. The air is quite different up here from that in the lowlands—it is purer and more bracing, and even on the sultriest day of summer there is a small, refreshing breeze. The moon at full swings low above the pine ridges, and a rainbow sometimes links the hill to the heavens with a jewelled span of colour; and on days of storm when the lightning sets the sky afire and the thunder rolls through the ranges and the rain shuts out the everyday scenes and imprisons me in a cloud-locked world, I share in the primeval grandeur of the elements.

To contemplate the hills, "rock-ribbed and ancient in the sun," is to gain serenity in times of strain, healing for our hurts of heart and mind, and strength to face the struggles and difficulties ahead. We have gazed upon the eternal handiwork of the Almighty, and as that noted mountaineer and writer F. S. Smythe has said, "The hills have taught us to be content in our faith and in the love of God who created them."

Mary

GARDEN GOSSIP

IN the late 1920's my sister and I sent to America for a gladioli catalogue. We were delighted to discover that not only was each flower fully described, but also illustrated in colour. Many happy hours we whiled away compiling lists of the varieties which appealed to us, but as those were the days when every penny counted, our wish to purchase some of the gladioli was not granted. However, the attractive catalogue caught big brother's eye, and the next season glorious spikes of gladioli bloomed in his garden. Some years later I married and when I started a garden of my own I bought a modest 12 gladioli corms. From the moment I planted them till the first blooms appeared was a period of happy anticipation. I carefully tied the flowering stems to stakes, counted the buds, and pushed errant ones into their right positions. What a thrill it was when the first buds burst and the petals began slowly to unfold. I love the velvety blackness of "Arabella," the delicate pink of "Early Bird," the clear, rich yellow of "D.O.X.," the fiery scarlet of "Kassell," the violet of "Pelegrina," and the pure snowiness of "Star of Bethlehem."—**"Xyris," Carterton.**

IT has been terrible weather for harvesting, but good for planting things in the garden. I've had a wonderful show of blooms this year: everything has done extra well, the only complaint being that the weeds grow too fast and there is too much rubbish to clean up. We see such nice gardens on our way to town. I hate to think what would happen if I were driving, because I simply can't take my eyes off the flowering beauties as we pass. —**"Mary Ann," Bell Block.**

BECAUSE we had such a dry spring, the seedlings planted later have not done very well. But in spite of the continued winds and lack of rain, we've had a lovely blaze of colour in the garden. My carnations caused me disappointment because I don't seem to have one red or yellow out of the 25 plants I bought. They proved to be mostly shades of pink, and there are only a few left to bloom now.

What a nice idea of yours starting a corner for "Garden Gossip." Can I hope that this will again be included? As a gardener I do love hearing of the experiences of others, and I expect other gardeners are the same.—**"Tiggetty Boo," Kati Kati.**

PHOTOGRAPHIC COMPETITION

ENTRIES for the Photographic Contest, in addition to the prize-winners which appear on the opposite page, have been accepted from the following, some of whose photographs will appear in later issues of the "Journal," and payment will be made for each entry accepted for publication.

Miss R. Johnson, 256 Bridge St., Nelson, 6; Miss Marjory M. Lill, "Haeremai," Willowby R.D., 7; Miss G. White, Kohika R.D., Timaru, 3; Mrs. G. M. Winder, Fairlea, Stanway, Halcombe, 1; Mrs. W. J. Sharp, Taupiri R.D., Hamilton, 1; Mrs. M. North, Paterangi R.D., Ohaupo, 2; Mrs. E. J. Glynn, Mata R.D., via Whangarei, 2; Mrs. Chas. Greening, Springfield, Canterbury, 1; Mr. L. Humm, Geraldine, 3; Mrs. G. E. Gill, Sec. 8, Glencoe R.D., Invercargill, 1; Mrs. N. Cooke, "Stoneyhill," Mt. Pleasant, Sumner, Christchurch, 1; Miss A. Ah Chan, Box 64, Thames, 1; Mrs. E. J. Butchers, Fairview R.D., Timaru, 1; Mrs. W. E. Carter, Hunter Rd., R.D., Te Roti, Hawera, 1.

Where negatives accompanied entries these will be returned as soon as possible, but accepted entries comprising prints only must be held until after the appearance of photographs in the "Journal."

MAY I join your circle? I do enjoy the "Good Neighbour" section. My struggles in the garden come near disaster at times, as my two young hopefuls pull up the cabbages to see if they are growing, and our house cow isn't above devouring cabbages and lettuces, etc., if the gate is left open. I wonder if any gardener can tell me why my new gooseberry bushes did not bear any fruit this season. I planted the cuttings last Easter and they grew into fair-sized trees with lots of leaves but no fruit. I hope they bear some fruit next year. —**"Dolfus," Southland.**

MY garden and its varied contents are the joy of my life. Blessed indeed is the person who takes up gardening as a hobby, for a garden gives back much more than you put into it. A friend gave me a large root of delphiniums and now I have a stately row of them against the cream stone walls of my house. One year they nearly reached the eaves, but not so this season, for the nor'-westers have been too cruel and prolonged. Nevertheless, the blooms have been no less lovely. Blue is my favourite colour and means truth and constancy. I love the blue spikes of delphiniums for indoor decoration. Besides being beautiful, they are easy to grow, the secret of success being in deep digging and liberal application of farmyard manure.

—**"Peggy," Pleasant Point.**

Competitions

APRIL

A reminder—descriptions of your "Pet Aversion" must be in by April 15.

MAY

What do you consider the most helpful asset socially? The ability to entertain others is a pleasing talent, nor are the gifts of adaptability, sympathy, and personal charm to be regarded lightly; nevertheless you may feel there are other qualities which are more important in this connection. A prize of 10/- will be given for the best answer to this question, and the second prize is 5/-.

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Mr. L. W. Humm, Geraldine.

LEFT—*SECOND PRIZE*

Atiamuri Rapids, Waikato River.
Mrs. W. J. Sharp, Taupiri R.D., Hamilton.

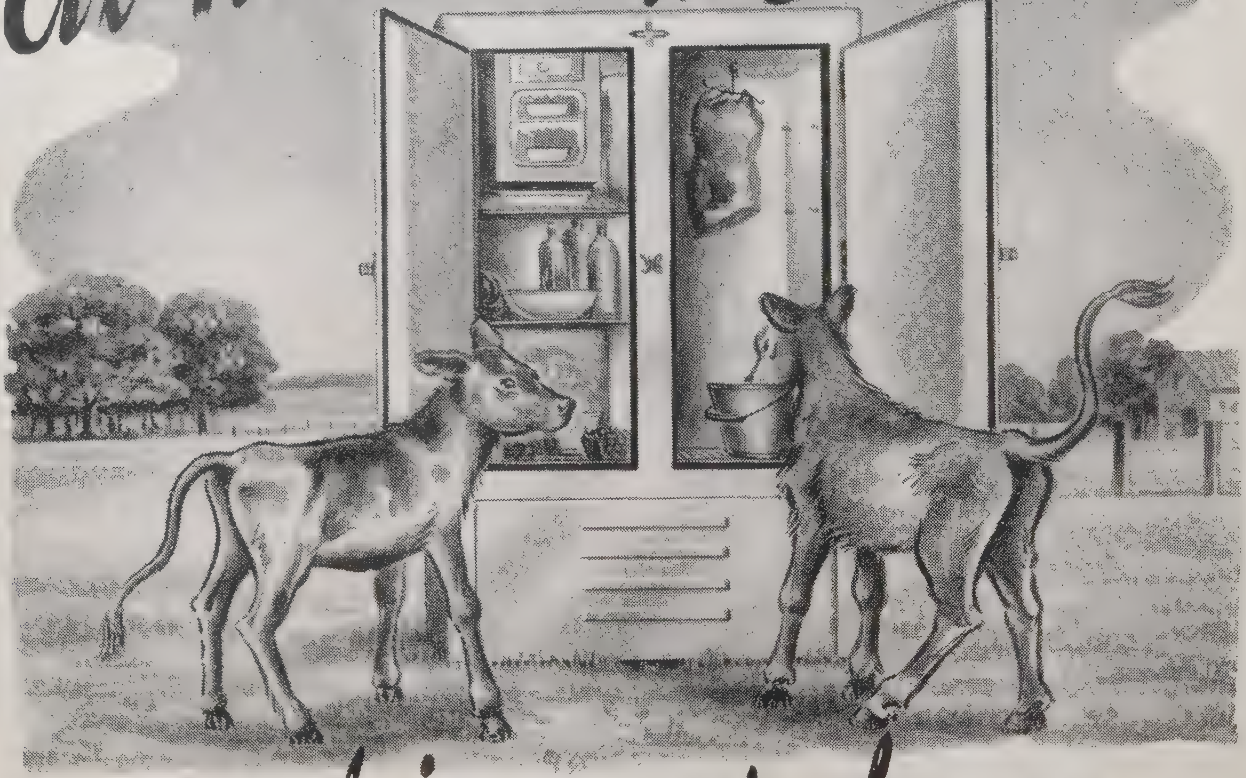
BOTTOM RIGHT—*THIRD PRIZE*

Auckland University from Albert Park.
Miss R. Johnson, 256 Bridge St., Nelson.

BOTTOM LEFT—
HIGHLY COMMENDED

Bob's Cove, Queenstown.
Miss Grace White, Kohika R.D., Timaru.

At Home ... in Summer..



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PROTEINS OF ANIMAL ORIGIN IMPORTANT IN THE HUMAN DIET

FARM families, engaged in day-to-day care of livestock, must necessarily have a general appreciation of nutrition. This discussion about the need for protein in human nutrition and the importance of the different types of protein may be best introduced, therefore, by reviewing some livestock-feeding practices.

STARVATION faces many millions in Europe this winter. Through the publicity given to the needs of these people others are becoming more conscious of the necessity for a proper understanding of human nutrition. In a previous article, Dorothy Johnson, Rural Sociologist, Christchurch, outlined the part energy-producing foods play in nutrition: In this article she deals with proteins and the importance of proteins of animal origin in the human diet. Later, the writer will deal with vitamins and minerals.

THE function of proteins in nutrition is to furnish the building materials from which all new body tissues (muscles, glands, nerves, bones, and skin) are built and by means of which all tissues are kept in repair. Hence the importance of a protein-rich diet for flocks and herds in the production of meat and dairy products.

As pastures supply the main and often the only food for our grazing animals, the successful farmer is one who maintains his pastures in a condition where the protein - carbohydrate ratio is in correct proportion for the needs of his animals. He keeps his pastures short and maintains a correct balance between grasses and clovers by top-dressing and liming. Rank grass will not produce milk or fatten lambs; rank growth is low in protein, and abundant protein is essential for growing and milk-producing animals.

What Proteins Are

Proteins are substances of a definite but very complex chemical constitution. They resemble each other in that they contain a relatively large amount (about 16 per cent.) of the chemical element nitrogen.

In the digestive process (and by certain laboratory methods too) they are resolved into the less complex substances known as amino-acids which can be likened to building blocks or bricks in the body's tissue structure. Each plant and animal tissue has its own characteristic proteins and amino-acids which form the food proteins absorbed by the body.

Proteins which do contain all these amino-acids—necessary for building up body tissues—are said to be "complete" proteins. The animal proteins, meat, fish, milk, and eggs, are such first-class or quality proteins in human nutrition.

Those which contain some, but not all, of the essential amino-acids are called "incomplete" proteins; these include many vegetable proteins.

A further comparison with livestock-feeding practices prompts understanding of the position of "complete" and "incomplete" proteins. The pig is an omnivorous animal. For rapid growth it needs a properly-balanced diet. Maize is a common grain used for pig feeding in many countries, but its proteins are incomplete and rapid growth and fattening are secured only if a small amount of meat-meal (a complete protein) is fed in addition to maize.

In human nutrition a basic quantity (depending on age and other requirements) of complete proteins as supplied by milk, meat, fish, and eggs which may be supplemented by varying quantities of other proteins as supplied by many vegetable foods is required.

Diet and Farming

The pattern of our diet is largely a reflection of our farming. In countries where dense populations are dependent on their own soil resources, such as in India and China, cereals and similar crops are the main source of human food. Even the European peasant and industrial worker in normal times can secure only very limited quantities of meat, milk, and eggs to supplement a basic cereal diet. Pressure of population forces the human race to subsist very largely on vegetable foods. In New Zealand conditions are very different. The country's whole farm economy is based on the production of animals and animal products. With a favourable climate permitting the establishment of highly-productive pastures and the adoption of labour-saving machinery, New Zealand has built up a great export trade in meat and dairy products. Our diet reflects the foods the country produces so abundantly; New Zealanders eat large quantities of beef and mutton but not poultry, for table poultry can be economically produced only where grain is plentiful. The Dominion does not produce grain sufficient even for her own bread requirements. The high-quality protein foods are the world's greatest need today. Europe wants meat, fish, poultry, eggs, dried milk, cheese, and pulse crops (such as peas, and beans). About 20 grams per day are commonly referred to as the minimum quantity of high-quality protein on which a person can remain healthy over a considerable period. To reduce consumption below that level in most countries means malnutrition.

Protein Requirements

What do these 20 grams of high-quality protein really mean? First, consider the accepted daily total protein allowances, depending on age and other considerations, which are set out below (amounts recommended by the National Research Council):—

DAILY PROTEIN ALLOWANCE.

		grams.
Children,	1-3 years	40
Children,	4-6 ”	50
Children,	7-9 ”	60
Children,	10-12 ”	70
Girls,	13-15 ”	80
Boys,	13-15 ”	85
Girls,	16-20 ”	75
Boys,	16-20 ”	100
Men, regardless of the degree of activity		70
Women, regardless of the degree of activity (muscular or mental)		60
Women in pregnancy		85
Women in lactation		100

It can be seen from the table that pregnant and nursing mothers require liberal amounts of protein. Grown-ups need it chiefly for the upkeep of their bodies (replacing old cells with new ones) while children need it for actual new construction work.

These grams of protein may be best appreciated by considering the average protein values of common foods as set out in the following table taken from Julia Lee Wright's "Kitchen Nutrition."—

AVERAGE PROTEIN VALUES OF COMMON FOODS

	grams
4oz. (1 serving) lean meat ..	**12-21**
1 egg	**7**
½-cup baked beans	**7**
1 glass milk (8oz.) ..	**8**
1oz. cheese	**7**
1 serving ice cream or milk pudding	**4**
1 slice bread	**3**
½-cup oatmeal	**3**
½-cup fruit or vegetable ..	**1**

If a day's meal were planned from the table, the following might be arranged:—

	grams
BREAKFAST:	
1 cup porridge	**6**
1 egg	**7**
2 slices bread	**6**
LUNCH:	
2 slices bread	**6**
1oz. cheese	**7**
1 glass milk	**8**
DINNER:	
1 serving lean meat	**20**
1 cup vegetables	**2**
1 serving milk pudding ..	**4**
½-cup fruit	**1**

These three meals provide 67 grams of protein and most of the proteins are secured from the meat, milk, cheese, and egg. A boy in his teens has, say, four more slices of bread (12 grams) and two more glasses of milk (16 grams), and there are 95 grams with no trouble at all. Counting all the stray grams of protein from ice-cream cones and second helpings it is easy to account for a large amount of protein.

Indeed we have comfortable margins above actual needs; though the more popular varieties of animal protein may be short sometimes, other types can be substituted.

Variety is good for people; change means growth. Old patterns, even the ones with most appeal, if too persistently followed may keep us in a rut. People in New Zealand tend to take their protein too much from meat. The average has been 11¾oz. per day with ⅖ths of a pint of milk and ⅓oz. cheese. A better balance would be 4oz. meat or fish, 1 pint of milk, 1oz. cheese and 1 egg (or beans) which would greatly improve our intake of desirable substances besides protein.

It is our duty to understand the point of view of others, even when we cannot agree with it.

In other countries much more substitution of protein has been necessary. In "The American Home" magazine (October, 1945, issue) the following guide to housewives was given:—

These foods and combinations will replace approximately the protein, iron and B vitamins found in 4oz. of meat or poultry (1 serving):—
Two eggs;
½-cup cottage cheese and ½-cup leafy vegetables;
2 cups milk and 1 cup cooked whole wheat or oatmeal;
4oz. fish and 1 cup milk;
½-cup cooked dried peas or beans and 2 cups milk;
½-cup oysters and 2 cups milk;
1 cup cooked whole cereal, 2 tablespoons nuts and 1 egg;
1 egg and 1 cup green, leafy vegetable;
1 egg and 1 cup milk;
2 slices wholemeal bread and 2 cups milk;
½-cup cottage cheese and 4-6 halves dried apricots; and
2 slices wholemeal bread.

N.Z. and Food Production

Probably no country can produce meat and dairy produce so economically as New Zealand. If the general standard of world nutrition is to be raised, all the high-quality protein products New Zealand can produce are likely to be needed. New Zealanders are not making the best use of the vast quantities of separated milk available from butter making; the separated milk, a valuable human food, is fed to pigs, but if dried it would be a food very desirable for peoples on a marginal diet.

It is to be hoped that international agreement will foster trade in foodstuffs and that surpluses, instead of being destroyed, will be made available to peoples in dire need and that freedom from want will become a reality.

◆

Birthday Fare

I HAVE several sets of biscuit cutters —animals, numerals, and the letters of the alphabet. I used to make a nice "short" biscuit recipe and ice everything in different colours, and give each child his or her name spelt in biscuit letters, complete with age, to take home. I also made queen cakes in deep patty tins and then covered the cakes with green icing. When that had set I took a sharp knife and cut a V-shaped piece out of the side of each cake. I iced the gap with pale pink icing, pressed a tiny spot of white icing on each side of the top of the gap for eyes—using cachous for centres—and the result was a most realistic-looking frog. You'd be surprised how many different expressions those frogs had: I used to laugh at them when I made them. A stout piece of cardboard cut in the shape of a lily pad and covered with green paper made an excellent plate. I remember one birthday cake my son had with marzipan frogs as decoration—one frog for each year—and another time the birthday cake was decorated as a clock with hands and figures showing his age. I never bothered with fruit cakes for the children when they were young. I preferred a three or four sponge-layer cake with jelly and cream filling and covered with frosting.

I still have a dozen place-cards of heavy celluloid, mounted on a base with a space on which to write the name. They are coloured and some are ornamented with crowns, others with jesters, Chinese men, etc., and one is in filigree and portrays pierrot and pierrette under a tree.—**"N.G."**

◆

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Mail Day in The Sounds

"THE launch is here!" There was the usual last-minute scramble for sun-glasses and shady headgear before trooping down to the beach. The landing ladder was set at so steep an angle against the side of the boat that you felt you were making a practically vertical ascent, rather like a fly climbing a wall. Surprisingly, however, everyone managed the feat without mishap and soon we had all settled ourselves on board. . . .

A CONSIDERABLE portion of the cabin interior was piled with mailbags, each padlocked and with the address printed on the canvas in large block letters; for the pilot of our launch was not only the general carrier of goods and passengers in these parts, but the postman as well—a pleasant enougn task on a morning like this, though not quite so enviable when battling through rough seas in the teeth of a mid-winter gale. He makes his postal round three times a week, but in the more isolated reaches of the adjoining sound mail day occurs only one day in seven—on Mondays. Probably Sounds housewives choose another and less eventful day for their washing! It would be interesting to know whether after his arrival they give themselves up to an orgy of reading to catch up with current happenings in the outside world, or so portion it out that each day holds its share of fresh news.

Twin plumes of foam curled in our wake as we sped through the water, encircled by rocky inlets, and hills bearing the yellow scars of erosion, and here and there bush-covered slopes whose peaks were tipped with blue haze. At length we reached the busy harbour where we were to take on a further quantity of cargo. While this was being loaded we strolled along the wharf and when we returned from our brief tour of exploration we discovered that we now had to share our quarters with bulky crates and bags of flour and a large and miscellaneous assortment of boxes. We made ourselves as comfortable as possible in the restricted space at our disposal and the launch continued round the bay till we gained the entrance to the "canal"—a passage cutting a large area of land in two, and negotiable only at certain tides. Fortunately the tide was favourable on this particular occasion, otherwise we would have had to go the long way round the winding miles of coast. The channel was so narrow that the cliffs were literally only an arm's length from the boat on either side, and the skill with which our pilot handled his craft won our wholehearted admiration.

SPACE AND BEAUTY

Blue distances, that melt into the sky;
A misty, purple shadow on the hill;
A floating wisp of cloud. The world is still,
Save for a wayward breeze that frolics by.
O solitude and peace! O calm delight!
A breath immortal throbs in Beauty's core:
A something that can perish nevermore,
A spirit that abides beyond the night!

—Margaret Ormiston.

Cabbages and — Princesses

Our first stop after coming through the canal was at a bay designated "sandy." This seemed somewhat of a misnomer, as only the thinnest ribbon of beach was visible. Two little sisters in hand-knitted jerseys and tartan skirts came running along to collect a mailbag, a newspaper, a parcel of cabbage, and a loaf of bread apiece. They smiled shyly in response as we waved good-bye. At the next bay the only sign of habitation was a cottage enclosed by a thick green hedge. We caught a glimpse of an old-world garden as the gate was opened and the lady of the house came out to receive her mail.

We went on to the head of the sound and down the other side, calling at various places en route. As we drew near one picturesque bay we found its beauty marred by a couple of sheds roofed with corrugated iron. A coat of green paint would have done much to camouflage their unsightliness, whereas now the natural loveliness of their surroundings only accentuated their ugly outlines. Several people were awaiting our arrival. When it came to getting the mailbags and some of the heavy sacks off the launch a man backed his horse and cart into the water so that the dray formed a gangplank between the boat and the shore. It was certainly a useful arrangement, although a trifle unsteady at times when Dobbin lunged forward in search of pastures more to his liking, but a vigorous "whoa" from his owner soon checked his caprice and equilibrium was restored once more.

Our journey resumed we now passed many acres of flat paddocks at the foot of the hills. The abundant grass and flourishing crops gave evidence of the soil being much more fertile hereabouts than any we had seen hitherto. Presently we anchored by a green, tree-shaded bank where the undergrowth was starred with the delicate azure flowerets of bluebells, reminiscent of a country lane in England. Here we delivered mail, plus the inevitable paper, a side of bacon, a case of groceries, and several intriguing-looking packages. The boat tended to list somewhat when these

were removed, but the old salt who was their recipient, after a prolonged scrutiny of the situation, merely removed his pipe from his mouth and gestured silently with its stem that it was safe for the pilot to proceed.

Once we were under way the lighting of the patent stove caused us considerable diversion. The flame either leapt high into the air, causing everyone in the vicinity to move back hurriedly, or else it died right away in a cloud of stifling black smoke and had to be coaxed back to life again. The men of the party made valiant attempts to stem these temperamental outbursts and finally, one member more ingenious than the rest used his wide-brimmed hat to shield the stove from any draughts, and the flame gradually assumed more normal proportions.

Walking the Plank

Our attention had been so taken up with all this activity that we were not aware of reaching another stopping-place until the slowing of the engine warned us of the fact. We appeared to be heading straight into a high cliff, and indeed, we halted only a foot or two away from the towering mass of rock. A plank was lowered from the bow of the boat to where a path wound up the side of the cliff, this primitive gangway being the only means by which passengers could disembark here. The elderly lady whose destination it was accomplished the perilous descent with an agility remarkable in one of her years.

Our next port of call proved a striking contrast: it boasted an excellent wharf and a boatshed, and a wide road led over the hill to the farmlands beyond. Further on there was even a schoolhouse for the handful of pupils in the district. One of the farmers had come down to meet us and his dogs rushed up and down barking a vociferous welcome. The children—sturdy, rosy-cheeked youngsters—seemed rather overawed by the presence of so many strangers, and hid behind their father while he completed his business transactions with the boatman.

Lunch in a Glade

Owing to the erratic functioning of the stove the water in the billy was only lukewarm, so we all went ashore and hunted about for dry twigs and driftwood and we soon had a good fire going on the beach and the billy was transferred thereto. Lunch was eaten in the most delightful bush glade, and if we had to wage relentless war on the sandflies and pick fragments of manuka leaves out of the sandwiches, and the tea tasted smoky, what did it matter when we could feast our eyes on lacy pungas and graceful hoheria, bronze-leaved birch and gnarled konini with its polished reddish-black berries ripe overhead. We would like to have lingered much longer in this lovely spot, but the boatman reminded us that the lunch hour was limited on the mail-run, so we doused the embers of our fire, packed up the picnic gear, and reboarded the launch.

Clouds

At eve they rest upon the hills,
The sunlight o'er them pours its golden
rills,
The day is done and to the weary heart
What promises of glory they impart!
"Is Faith so weak?" they softly speak,
"No joy abides, where'er you seek?
Come up with us, rise peak o'er peak
And view the land beyond."
—(Author unknown).

(Sent in by "Cloudy," Ashburton).

We visited two more bays. The second was too shallow for us to venture more than half-way in and a boat promptly put out to meet us and came alongside. We now parted company with the reverend gentleman who had been with us most of the trip, and he was soon being rowed towards the little settlement where he was to preach that night. In the Sounds region a minister does the greater part of his pastoral visiting by launch, often travelling long distances to hold services for the scattered members of his circuit. As we headed for the open water again those who glanced back had a clear view of the two yellow lines of road bisecting

5 REASONS

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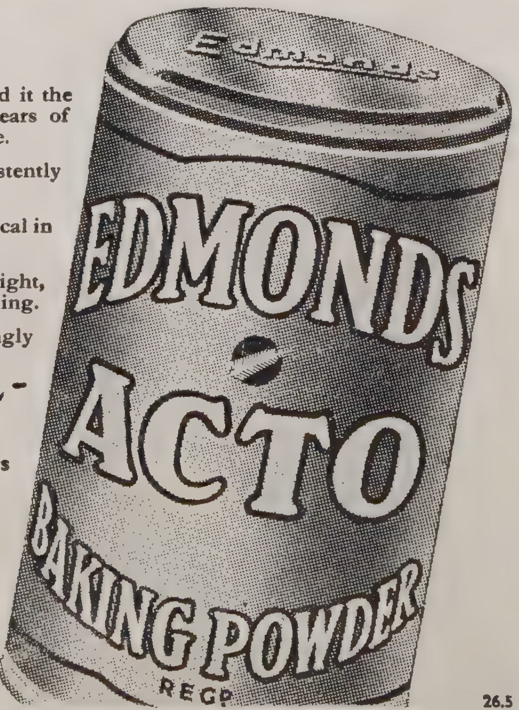

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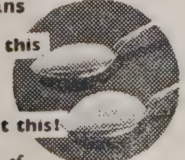

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26.5

the range of hills in the background at parallel angles.

The next portion of the coast where we manoeuvred close inshore possessed a most curious rock formation, the stones sloping down to the water in a circular causeway. The beach was so littered with tins and bottles and boxwood that it looked like a smugglers' cove, or perhaps it was merely the local inhabitants' day for spring-cleaning. The tiny red and white building on the tableland beyond bore the dignified title of Post Office and we did a brisk business with the postmistress in the exchange of mailbags. A kerosene tin of milk was also hoisted aboard, but passengers who hoped for a cool drink of fresh, creamy milk to quench their thirst were sadly disappointed: the contents of the tin were sour and apparently destined for consumption by the inmates of a pig-sty further down the coast.

We stayed quite a time at a subsequent landing-place where there was a long jetty built on piles formed by tree-trunks and columns of oil-drums. Besides the mail, we unloaded suitcases, a canvas kit, several crates, and an enormous cardboard box marked "Fragile," and requiring the combined efforts of four men to ensure its safe passage from the boat to the jetty. Afterwards a large stone jar was handed down with a label round its neck bearing an address and the instructions: "To be returned with raspberries to Mrs. A—. B—." —a most convenient method of transporting small fruits!

Our final halt was in mid-channel, the beach being too shallow to permit the launch going in any nearer. Two men came out in rowboats to take delivery of the bulk of our freight—sacks of flour and grain, a case of condensed milk, mail, and stores. Meanwhile the sea had become distinctly choppy and the small boats were heavily buffeted by the waves, but though both the rowers were well past middle age, they handled their oars so expertly that they were soon making visible progress as they battled shorewards against the adverse current.

Now the launch was turned homewards and skimmed along past sheltered coves and curving hills where trees marched against the skyline, past an emerald-wooded island that aroused the explorer's urge in all of us, and making fast time till we rounded the promontory which marked the far boundary of our own bay. We stepped ashore with a new and keen appreciation of the launchmen who travel the Sounds in fair weather and storm to deliver mail and supplies to those who dwell in remote places.

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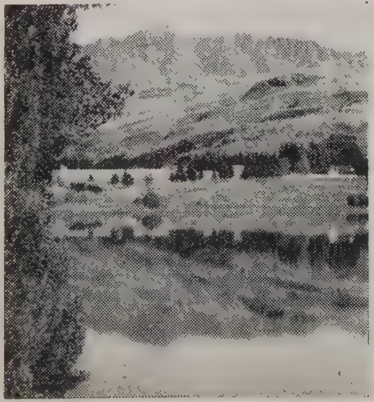
***Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their rounds.*—Hereodotus.**

Lake of Reflections



I NOTICE that "Tinkle Tinkle" mentions the fascination of reflections. Ever since I remember I have lived near water, usually within sight of a lake. Water, with its ever-changing moods, adds to my happiness and contentment. I have lived near most of the South Island lakes, Rotoroa and Roto-iti with their bush-clad slopes; Tekapo and Pukaki with their pale, greenish-blue colour surrounded by snow-covered mountains, the snow coming right to the water's edge in winter. During the summer large cumulus clouds often hang lazily round the mountain tops, and all are mirrored in the clear depths of the lake. Ohau and the more southern lakes are of a much deeper shade of blue, the water being crystal clear. Wanaka, with its poplars and weeping willows round the bay, is very charming, but Hawea will always remain in my memory as the Lake of Reflections—cabbage trees admiring their image in the water, white clouds sailing across the lake, and mountains with every tree and stream perfectly reflected.

One night when the full moon made it almost as light as day and the water was clear like glass, we went for a boat-trip up the lake. The reflections were beautiful, each mountain peak being reflected clearly in the bright moonlight—truly, a sight to remember. **—"Ira," Cromwell.**

Colour

HOW you must have longed to add some colour reproductions to your November number, but you worked wonders with mere words in black and white, putting snippets of colour between the pages. Emily Dickinson's "Evening" was a lovely discovery—she wrote the most charming things. Do you know her "Aristocracy"?

The pedigree of honey
Does not concern the bee:
A clover any time to him
Is aristocracy.

I've copied two of Dorothea Mackellar's poems for you — the colour just spills out of them. Would that I could enclose for you the gold we can see from our window: the hillsides heavy with golden broom; and a piece of reclaimed ground (some 20 acres) just below us and bordering the sea is gold-over with lupins, such a pale lemon-gold that the hillside looks tawny beside it. And the scent—it drifts up into our rooms, especially on a warm day, or in the evening when the dew is gathering.—**"Tinkle Tinkle," Dunedin.**

Colour Superstitions

Blue is true,
Yellow is jealous,
Green's forsaken,
Red's brazen,
White is love,
And black is death.
(E. of England).

I DID enjoy reading your November pages. Rainbows are lovely things and you have given us new thoughts regarding them.—**"Peggy," Pleasant Point.**

I THINK the women's section of the November issue was delightful with those lovely photographs and your beautiful article on "Colour."—**"E.W.," Waiheke Island.**

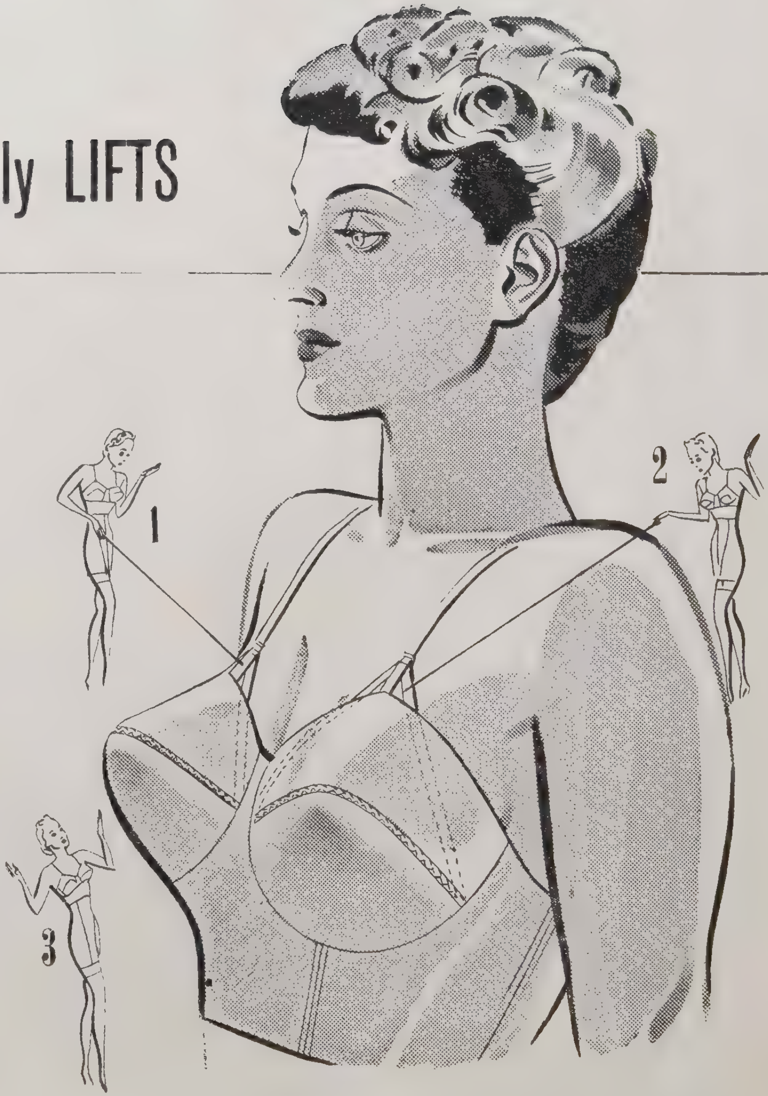
The uplift that really LIFTS

If you've had the aggravation of an uplift letting you down after its first tubbing, you'll thank your lucky stars for Wonder-Lift. Its 3-way lift stays bracing to the end.

On the underside, over each bosom, three straps are arranged tripod-fashion; these adjust the uplift as you wish. It is a 3-way lift and brace which also cleverly allows for movement: two of the straps keep the uplift taut, the third, elastic, lets you move freely.

This explains how it is you feel braced beautifully in your Wonder-Lift, without red ridges in your shoulders in painful evidence!

It's a 'must' now, in the scarcity of elastic, to try on your Wonder-Lift before you buy. Take the trouble, and whether you're big or whether you're small, you'll find your Wonder-Lift a joy to wear.



1. *Points to the elastic that gives the ease.*
2. *Points to the ribbons that brace. (Dotted lines show where they pass beneath the bra.)*
3. *Admires what is, in effect, an uplift from beneath.*

Berlei

WONDER-LIFT REGD

BRASSIERES

Letting Down
AND
Letting Out

By EVA TOPPING, *Rural Sociologist, Auckland.*

*"The girls' warm dresses are all too small
for them to wear this winter!"*

SCHOOL girls grow so fast that this is the usual remark mother makes when she begins to look over the clothes for the coming season, and she has to set to work altering, repairing, and enlarging to make their frocks suitable for wear again. There are many ways of letting down and letting out to keep pace with the rising generation, and the methods chosen will depend on the styles of the garments, the amount of extra room needed at various points, and the material available. Let us consider the simplest jobs first and gain encouragement and inspiration by success in those to go on and tackle the more complicated propositions.

[*Sparrow Industrial Pictures photo.*

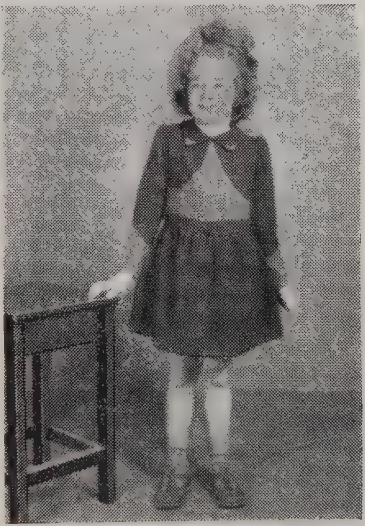
"This is my favourite dress."

Lengthening at Hem & Sleeves

The easiest work is when the dress requires only lengthening at hem and sleeves. Unpick the hem carefully and press well with a damp cloth and hot iron to remove marks of the former fold and stitching. Find some suitable material and add a false hem. The strips of material for the new facing should be cut on the cross for a gored skirt if possible, as the edge will give to the curve of the hem; try to make them wide enough to have the line of stitching on the original fold, as this helps to disguise any mark or slight signs of wear (Fig. A). If sufficient material for a full-sized hem is not available, use a narrow crossway strip, Prussian or bias binding; machine along the extreme edge, turn back, and catch-stitch to the skirt by hand so that the stitches do not show on the right side (Fig. B). If the skirt is very short and needs an additional hem, cut a strip of material the required length plus seam allowances on both edges. Join the pieces to match the skirt seams exactly; press very flat and join together on the right side. Press well, and turn back on to right side.

[*Sparrow Industrial Pictures photo.*

"It looks awful!"



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"That's better, isn't it?"

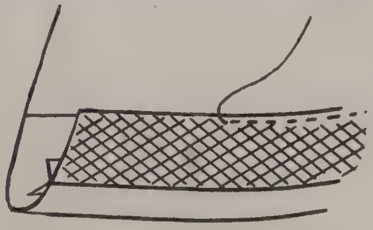


Fig. A—Simple false hem.

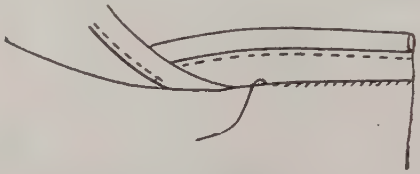


Fig. B—Narrow binding on bias strip; slip-stitch into place.

Put two or three rows of stitching along the hem, making the first one as near the edge as possible. Well pressed and neatly stitched, this hem will not be a noticeable "addition" (Fig. C).

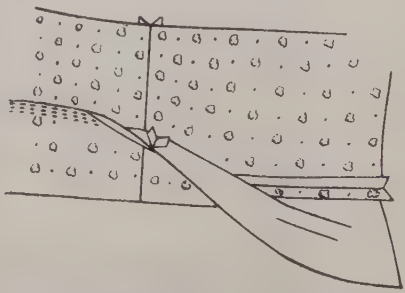


Fig. C—Wide hem of fresh material joined on frock and faced up to right side to conceal join.

Rows of woollen braid will provide another method of "letting down." Turn a narrow fold on to the right side and stitch the first row over the raw edge. Put another row on the worn hem fold and a third either at an equal distance above the old hemline or in between the first two rows. When the line of the former hem fold is very much worn, some measures to hide the trouble may be needed. A row of narrow silk braid now obtainable in many colours at 3d. a yard will make a very satisfactory job and could be repeated as edging for cuffs and collar to complete the picture. Bias binding or crossway strips of contrasting material would be alternatives, or rows of herring-bone stitch in bright wool would serve the purpose and strike a gay decorative note into the bargain! When the crease mark will not come out satisfactorily use a binding to face up the hem and run three rows of machine stitching, making the middle one fall exactly on the line of the crease (Fig. D).

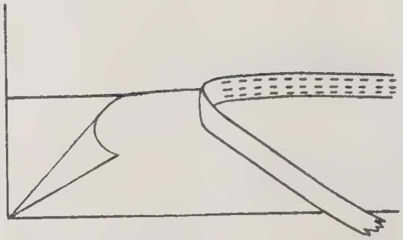


Fig. D—Hem turned with bias binding or strip. Rows of machine stitching conceal crease mark of former hem.

Sleeves can often be lengthened by one of the foregoing methods, but if none of them is suitable add cuffs or bands of the original material. The belt can be used for this purpose and a bought belt substituted. A short length of contrasting material to make a new pair of cuffs and a collar to match will give new life to an old frock.

Pleated Skirts

Nearly every small girl has an all-the-way-round pleated skirt, set on a bodice. The easiest way to lengthen this style is by setting the skirt further down on the bodice, even slightly below the normal waist line if the jersey or jumper is long enough to cover the bodice. Where the bodice itself is too short, pieces of material can be inserted at the shoulders to give extra length. When the hem has been let down to the last possible inch, and the bodice has been lengthened but the skirt is still too short, see if it is possible to add a hip yoke of similar material or a plain colour to accent one of the shades of a checked or patterned skirt (Fig. E).

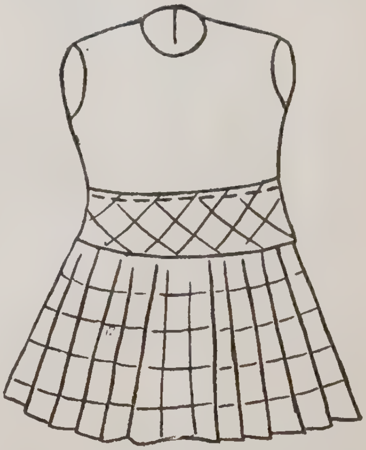


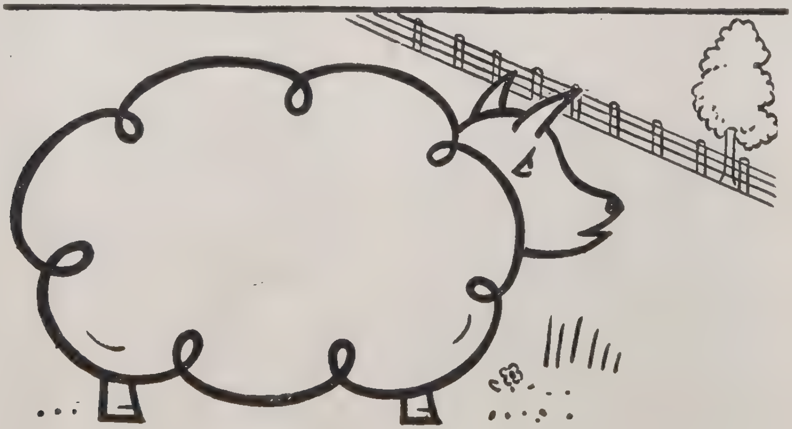
Fig. E—A hip yoke will lengthen a pleated skirt.

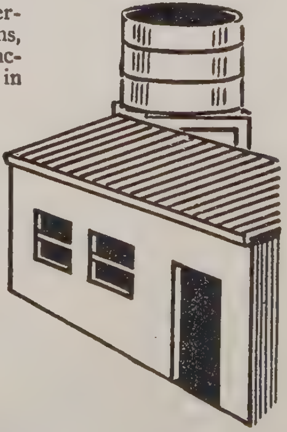
Yoked Frocks

Yoked frocks are fairly easy to enlarge in several ways. Unpick the skirt from the yoke and make a new bodice of material to tone or contrast, setting the original skirt at the waist line (Fig. F). The sleeves can be en-

To My Mother

O noble soul in fragile body set,
A dull drab lot and weary has been thine
Which well had overcome a soul less fine;
But thou hast battled and wilt battle yet,
And ever rise supreme. Through suffering
Thy faith was ever clear. Thy patience rare
But greater grew with greater grief and care,
And calmly still awaits all life can bring.
Disappointment's bitter way was thine,
Thy dearest hopes were left unrealised,
Yet patiently thou gav'st up what was prized,
And toiled and strove that I might realise mine.
So will I strive. I shall not live in vain
If I to half thy splendid strength attain.





"You Can't Pull the Wool Over My Eyes!" . . . .

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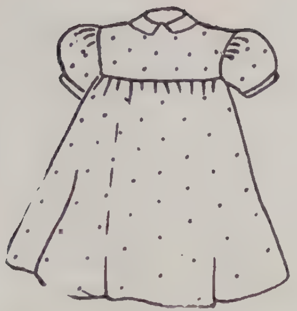


Fig. F—Above—Yoke frock. At right—a bodice of plain colour gives extra length and width.

larged by inserting a wedge-shaped piece (cut from the old yoke) at the under-arm seams (Fig. G). Set the

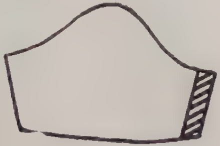


Fig. G—Add a piece of material from yoke to sleeves after unpicking.

original collar on the dress, leaving a little space back and front if the neckline has been enlarged, or bind the new neckline with a strip of the original material. Another way is to insert a contrasting band between yoke and skirt and a strip down centre front, binding neck and sleeves to match (Fig. H). Both of these renovations could be achieved by using the good parts of an old frock for the fresh bodice or insertions.

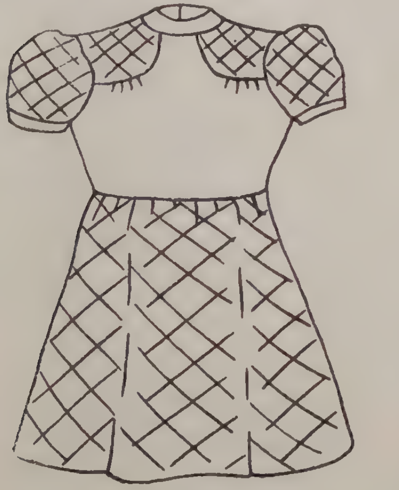
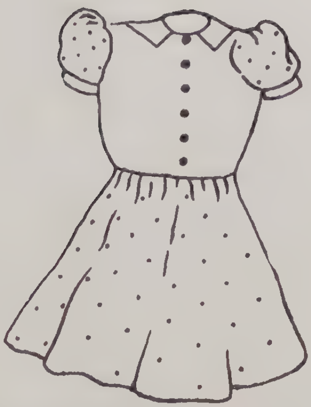


Fig. H—Another alteration for a yoke frock.

Remaking Frock Larger

If any of the original material is available, strips can be set in down the sides of skirt and bodice and between the two edges of the sleeves, thus making the complete garment a size or two larger. To make this alteration, it is generally better to unpick the side seams from armhole to hem, then the sleeve seams, and open the garment out flat. Place the strips of matching material between the two unpicked edges, making an overlapped seam on each side (Fig. I).



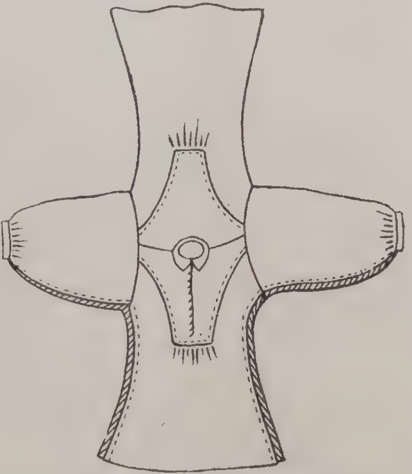
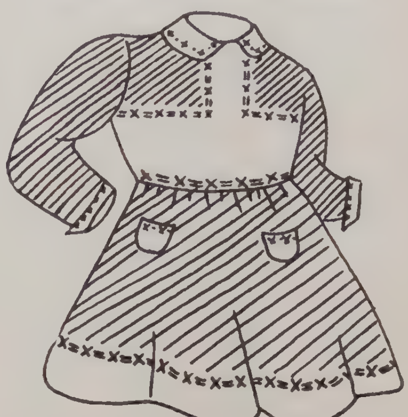


Fig. I—Frock unpicked at sleeve and side seams and matching material inset down sides. The new strips are shaded in the diagram.

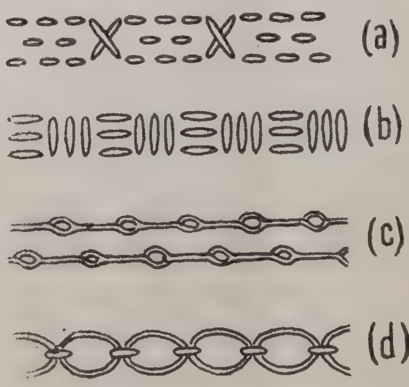
Be careful to take seam allowances into account when calculating the amount of extra width to be put in; it is upsetting to find the garment still too tight because the new seamings have taken up too much fabric. When no matching material is to be had, another idea will have to be found. The style of the frock may lend itself to enlarging by adding contrasting material or velveteen in a band down the front; the collar and cuffs can be replaced by a set made in the fresh material to make an attractive "new" dress (Fig. J, next page).

Contrasting panels can be inserted on either side of the front. Cut the frock down from neck to hem and make a paper pattern for panels of suitable size; 2in. in the bodice part, widening from 4in. to 5in. at the hemline would probably prove right. Make lapped seams, putting the frock edge over the new panels and machine about ⅜in. from edge. By adding touches of the new material at neck and sleeves, the contrasting panels will look as if part of the design of the frock and not merely an alteration (Figs. Ka and Kb, next page).

CHILD'S ALTERED FROCK.



Small girl's frock showing several alterations, with added strips of lighter tone material in yoke and at hem. Collar, cuffs, and pockets to match. Seams decorated with wool stitchery in bright colours. Wedge-shaped pieces inserted at under-arm to give extra width to sleeve top and armhole.



DETAILS OF WOOL-STITCH EDGINGS.

(a) Three rows of single stitch; cross stitch at intervals. Work in three colours, as red cross stitch, blue outer rows, white inner on blue frock; yellow, orange, brown on tan or green.

(b) 3 horizontal and 3 upright single stitches.

(c) 2 rows of snail's trail or knot-stitch.

(d) 1 row running stitch, 2 rows of another colour woven in and out of first row.

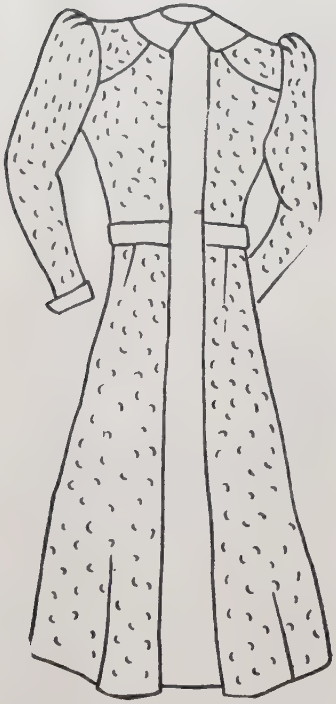


Fig. J—Panel of plain colour let in down front; collar, cuffs, and belt to match.

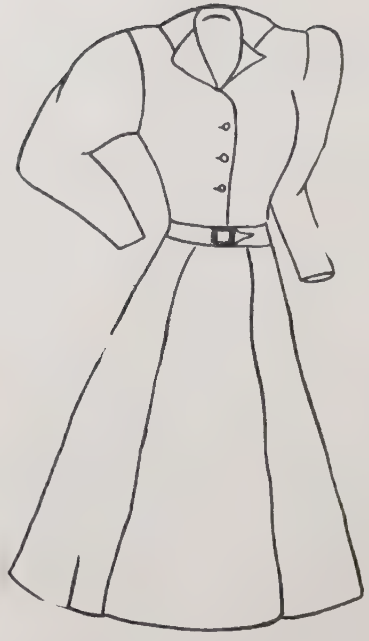


Fig. Ka—Unpick skirt seams and cut bodice at dotted line.

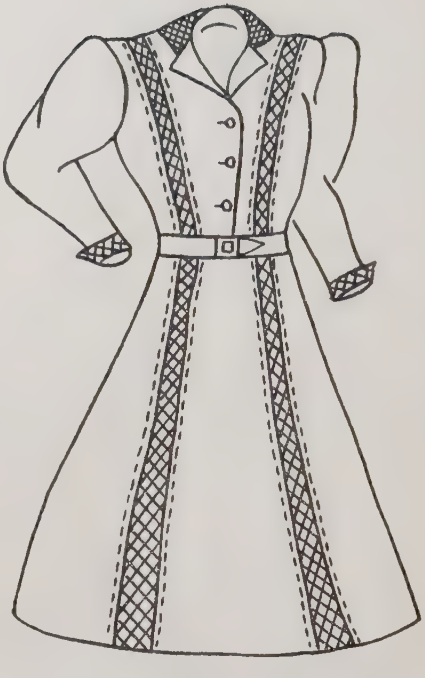


Fig. Kb—New side panels of contrasting material with cuffs and back collar to match.

Other Styles

Older girls' frocks are often more difficult to alter, but ways and means of making a satisfactory job can usually be found. Frequently more room is needed at bodice and hipline to allow for the developing figure. Where the under-arm is well worn, the bodice and skirt could be converted into a pinafore style and worn with a light-weight woollen or synthetic blouse or knitted jumper. If the armholes are cut much larger and the neckline lower, all strain and tightness across the front of the bodice will disappear (Figs. La and Lb).

A bolero type bodice will solve the problem of a too-tight bust-line. Cut the frock down the front and across the waist to the side seams and neaten the edges with crossway facings.

Make a new bodice front of contrasting material and attach at shoulder and side seams. Join the new front and dress shirt at the waist (Fig. M).

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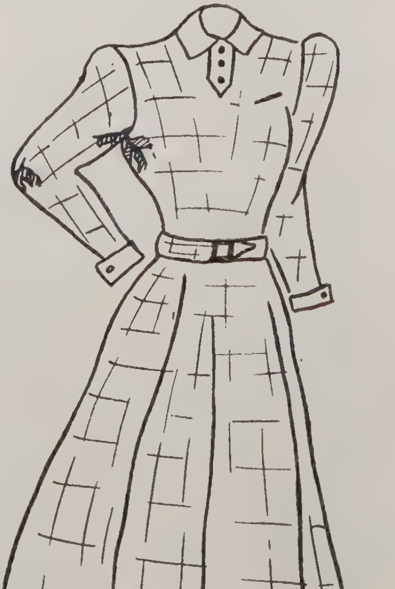

Fig. La—Dress worn at under-arm and elbow converted to pinafore frock (Fig. Lb).

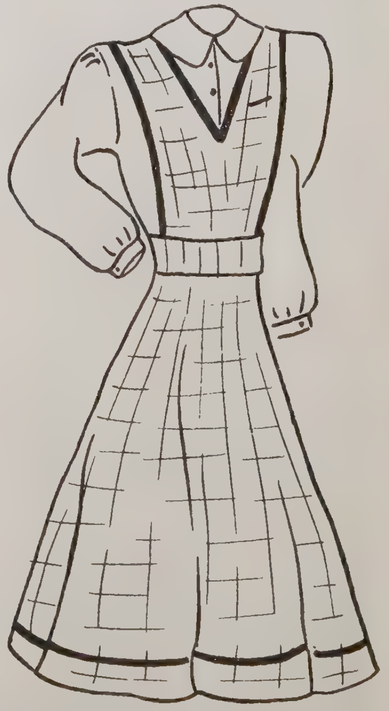

Fig. Lb—Worn line of former hem concealed by line of braid matches line of braid round neck and armholes. Belt let in at waist to give extra length and width.

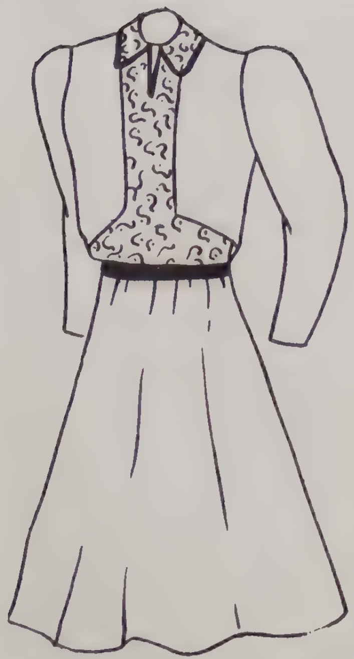

Fig. M—Tight bodice cut down front and across waist to make bolero effect. New bodice front of contrasting material.

Dresses with pleated bodices set into a yoke effect can be enlarged by unpicking the pleats and easing the fullness into the yoke as gathers. The corresponding pleats in the skirt can be made more shallow or one pleat on either side opened out flat to give extra room round the hipline (Fig. N).

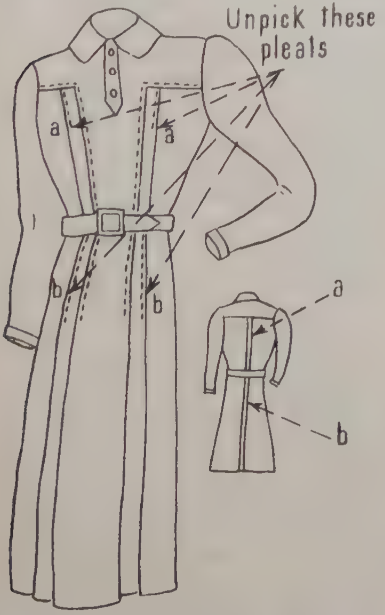

Fig. N—(a) Take out pleats and ease into gathers at waist and yoke. (b) Press flat and adjust at waistline; dart skirt at side back if necessary.

Many styles can be lengthened at the waistline by unpicking at this point and inserting the belt as a band. The placket will also have to be altered to accommodate the extra piece of material. Where sufficiently large turnings and hems have been allowed when the dress was originally made, enlarging and lengthening are a simple matter of unpicking and re-seaming, leaving narrower turnings. Take care not to cut the cloth when undoing the stitching or to stretch the edges. Pick out all loose threads and press well both before re-sewing and after, to help remove the mark of the former seams.

Dresses Illustrated

The teal blue woollen frock in the "before and after" illustrations on page 325 had a plain bodice, and a straight skirt. No more material of the original frock was left and the colour was difficult to match, so another discarded dress of a lighter blue which toned with the teal was used. First the bodice was unpicked at the waistline and then cut down the front, the lower edges being curved. The skirt of the lighter frock was gored, so many joins had to be made in the new bodice piece. These were disguised by working over them with rows of cherry-red wool herringbone stitch. The small lace collar was taken off and the corners of the teal collar were worked with cherry, grey, and green wool to repeat the bodice decoration. Extensions to the sleeves were made to match the bodice. The skirt gathers were eased out to fit the new bodice and the hem let down to the right length.

The pink woollen frock in the other illustration had a wide shaped bodice piece let in. The former belt was used to add cuffs to lengthen the sleeves and a strip of material was inserted at the underarm seam to give extra width.

With these hints as a guide, get out your scissors, a razor blade, the piece-bag, and the dresses that are too small and see what can be done about making them ready for wear when the colder weather comes. Don't be afraid to use contrasting or toning materials and decorative wool stitchery. Young people can wear these gay styles and they are very popular just now, so your alterations can be both fashionable as well as practical.

Happiness

It isn't by great things that you make others happy; it is not by extraordinary kindness and sacrifice. It is by the common, by the simple, by the universal, by what is in your power from week to week.—Matheson.

TREES AND HILLS AND SEA

WE have magicked ourselves from the countryside to the seaside, and all so quickly and unexpectedly that it really does seem that the fairies must have had something to do with it! And here, besides the joy of the sea, there's the joy of hills—much loved they are, and so different from other hills I've lived with. Mt. Cargill is full of surprises: every time I "lift up my eyes" I find something different, something new—sea at its base, a road near its summit; dark folds of native bush, golden splashes of English trees; grey scarves of mist across its peaks, grey wreaths of train-smoke across its meadows (do you know how beautiful train-smoke can be?); clustered houses in its valleys, scattered farmsteads on its higher slopes. At night its garment of darkness is fastened with shining brooches of light, and there's a green star up above. I've always loved Dunedin and am glad to be back. A poet has described the city as having "its shoulders in the cloud, its sandals in the spray."

. . . . Come shuffling in the leaves that lie on the path by the sea? The white-winged gulls will go flying up as we pass, and then fall again in a shower of snow.—**"Tinkle Tinkle."**

◆

The God to whom little boys say their prayers has a face very like their mother's!—J. M. Barrie.

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FOR A HEALTHIER NATION

Home Thoughts

71 Stockbridge Road,
Winchester,
Hants.,
England.

Dear Mary,

Many thanks for inserting my letter in the "Journal." I have had many interesting letters from your readers, and I know I am going to enjoy my correspondence. They all sound so friendly and one dear old lady said she had so many Lancashire relations to write to that she couldn't correspond with me, but would I accept the parcel of "goodies" she was sending. It was so strange reading of spring flowers and seed sowing when we are approaching winter. We've had a glorious autumn, but really, we deserved it—the summer was beastly.

I was up in London last week. The day was lovely, but the sun showed the town's shabbiness. The streets were packed—I can't think where everyone came from, though there were fewer foreign uniforms. I was able to view the bomb damage. On previous visits to my mother I didn't gaze—Adolf's new weapons didn't invite loitering! There are many tragic gaps and some districts have had whole areas erased. The town planners are in for a big headache. A great controversy now sweeps the country: "Should we forgo some of our rations to feed Europe?" The Minister of Food says his job is to feed us, and that after six years of monotonous feeding we deserve a break. The opposite view is, of course, obvious.

We are very slowly returning to normal. Older married folk with comfy homes have managed, but one feels extremely sorry for newlyweds and those who have been bombed out. Furniture is sold in small quantities on a permit; carpets and floor coverings are almost unobtainable and are rationed, as is linen. Kitchen utensils and crockery are scarce and crudely made. If people get the necessities of a home together, it is almost impossible to find accommodation. However, we are all hoping these troubles will pass when the Government has really had time "to get down to it."

Warmest greetings for a Happy New Year.

Sincerely—Iris Jones.

If you want to find out your real opinion of anyone, observe the impression made upon you by the first sight of a letter from him.

—Schopenhaur.

The School Lunch

By EVA TOPPING, *Rural Sociologist, Auckland.*

IN making the meal that has to be carried to school there is opportunity for exercising ingenuity to select wholesome, nourishing food in such variety that the child looks forward to the midday break to "see what mother has given me today." Frequently the school lunch presents a problem, for there is little time for preparation during the morning rush and sometimes it is difficult to give variety and interest to the meal. It is just as necessary to make a nutritious lunch to carry to school as it is to give wholesome meals on the table at home.

A GOOD lunch will be light but nourishing, easily eaten and carried, and well packed. It should include wholemeal in bread, scones, cakes, or biscuits; meat, fish, eggs, or cheese; butter or other fats; fresh fruit or vegetables or both; and a refreshing drink, so providing all the essential elements of a balanced diet, the proteins, fats, carbohydrates, minerals, and vitamins. Give something hard to chew each day such as a raw carrot, hard apple, celery, nuts, rusks, or twice-baked bread. Wholemeal, milk, and eggs should be used extensively for baking the scones, buns, and biscuits for the lunch-box

Many of the smallgoods and special dishes suggested later can be prepared while cooking the family meals; for instance, small meat pies can be made from pastry mixed for the apple or other pie for the evening meal. Such pies or pasties are very appetising, and by providing the cereal, fat, meat, and cooked vegetable part of a lunch, dispense with the need for savoury sandwiches, and help to save the butter ration. Extra vegetables or fruit can also be prepared when making a meal, and some can be set aside for the next day's lunches.

Eking Out the Butter Ration

Making lunches is often hard on the butter rations, and alternative spreads have to be used sometimes. Beef dripping which contains some of the meat juices from the joint and bacon fat from the frying pan are two good substitutes for butter when cutting savoury sandwiches. Lemon cheese, black currant jam, and honey are acceptable on wholemeal scones, rolls, and date or raisin loaf when butter is scarce or non-existent. Cottage cheese used instead of butter makes a good sandwich spread; make the fillings of lettuce, tomato, or raisins. Peanut butter seems to be a universal favourite, and is usually sufficiently moist to be used without butter, although, unfortunately, it is not always easy to secure. Cheese, grated finely, and mixed to a smooth paste with a little top milk also makes a good spread. Lunches containing meat or fish cakes or Cornish pasties need no butter for the savoury part.

"*What's* YOUR *mother given* YOU?"

If ingenuity and variety go to the preparation of school lunches, children are interested not only in their own but in others' too.

[*Sparrow Industrial Pictures photo.*

[*Sparrow Industrial Pictures photo.*

Lunch being prepared for a seven-year-old: Brown bread and butter, a hard-boiled egg in the shell, a tomato, slices of buttered date loaf, celery sticks to chew, and a bottle of concentrated black currant syrup, mug, and small packet of salt.

Making Sandwiches

For sandwiches the bread should be one day old at least, and in homes where several lunches have to be cut it is worthwhile ordering a special square loaf from the baker, as the sandwiches, being even in shape, pack more easily. Plain wholemeal or bran scones containing no sugar or rolls of brown bread can take the place of the usual bread occasionally to make a change. Lunch sandwiches need to be fairly substantial, with bread about ¼in. thick spread with generous amounts of filling, which will be neither too dry nor very moist when the packet is re-opened for the meal. Meat sandwiches tend to get dry and rather uninteresting, so add roughly-chopped parsley, a smear of tomato relish, plum sauce, mint sauce, or mint jelly. Tomato sandwiches become too moist, and it is often found better to give bread and butter and the tomatoes separately, not forgetting to put a tiny package of salt in the lunch-box.

Fillings

An inspection of the lunches brought to school would give the impression that there were only two or three kinds of sandwich fillings, but even with some lines in short supply there is still a fairly wide choice, and the following suggestions are all suitable:

Cottage Cheese:

Spread instead of butter and fill with lettuce, celery, water cress, or chopped nuts.

Peanut Butter:

Fill with raisins or dates (if obtainable), lettuce, or celery.

Liver and Bacon:

Spread with bacon fat, slice the liver very thin, and cut the bacon into small pieces, or put both through mincer.

Hard-boiled Egg:

Mash the egg, add chopped chives and parsley, pepper, and salt.

Bananas:

When obtainable, mash or cut in slices.

Fish:

Flake cooked fish, add a squeeze of lemon juice, and some chopped parsley.

Yeast Extracts:

Spread on buttered bread, sprinkle with chopped parsley, chives, or walnuts.

Grated Cheese:

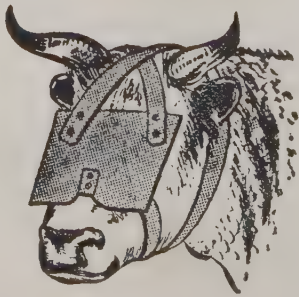
Mix with top milk, plain, or with parsley or chives.

Cooked vegetables make delicious sandwiches. Use cauliflower with a little of the white sauce; green peas mashed with finely-chopped mint; bacon fat can be used instead of butter for spreading the bread; runner beans with salt and a little pepper; new potatoes, etc., moistened with salad dressing and sprinkled with parsley and chives.

For beef sandwiches use dripping instead of butter, add some of the gravy from the meat dish, and sprinkle with parsley, chives, or finely-grated carrot. Add mint sauce or mint jelly to mutton sandwiches. Tongue, ham, cold boiled bacon, brawn, and home-made meat and fish pastes are all useful for sandwich fillings.

Lunches for Small Children

The younger children's lunches are sometimes a source of worry. The little ones are inclined to leave their food in order to play longer at the midday break, so the lunch needs to



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be interesting and varied with a "surprise" such as a little package of nuts, raisins, plain chocolate, or barley sugar tucked in occasionally. Biscuits or scones cut in fancy shapes or specially small sizes appeal to children, and very often two smaller things will be readily eaten, whereas a larger one would be left by the child who is inclined to be "difficult" about lunch. Sandwiches for the "primers" can be cut in fingers, small squares, or triangles.

Milk and Fruit Drinks

To many country children, especially those from dairy farms, milk is distasteful, and they need much encouragement before they will take even a minimum amount. Try disguising the milk by adding vanilla and sugar, and provide a straw to drink with to create the illusion of a milk shake. Other flavourings are honey, malt, nutmeg, ginger, beef essences, cocoa, and coffee. If the milk is still unacceptable when disguised in this way, use it to make a custard or blancmange set in a jelly jar and give fruit juices for the drink. It is a good plan to give the fruit juice in syrup form in a small bottle, ready for adding to water at school, as this will make for less weight in the lunch box. Tomato juice, passion fruit, lemon, orange, black-currant, and blackberry—in fact most of the fruit juices—make excellent drinks which children enjoy. Make the concentrated syrup during the bottling season ready for use when fruit is scarce

Packing

The nicest lunch can easily be spoilt by careless packing; when the various sandwiches, biscuits, fruit, and salads get broken and mixed the resultant mess is not very appetising. The different foodstuffs should be kept separate and packed so that they will not become unwrapped on the way to school.

Clear a place in a cupboard and keep all the lunch-making things together in the same place every day so that precious time is not wasted in the morning looking for paper, mugs, or boxes. Put in your "lunch corner" rolls of grease-proof or waxed paper, napkins or white paper, paper bags, jelly jars, mugs or cups, small bottles for syrup, larger bottles for ready-made-up drinks, straws, spoons, and something to hold salt. A small aspirin or other tablet bottle makes a good salt container for a lunch box. Holes can be made in the cap to make a shaker, although there is less risk of salt being spilt on the wrong parts of the lunch if the cap is not pierced.

A tin or box is needed for each scholar too; one that fits into the school bag will be easy to carry. Some of the stores are selling a lunch tin with a tight-fitting, hinged lid which is very suitable for school lunches, and is quite light in weight.

Jelly Jar Dishes

Small covered jelly jars will be found very useful for school lunches—various dishes can be cooked in them on the previous day, while the other meals are in preparation, and a considerable saving of time in the morning is effected. Here are some suggestions for suitable dishes:—

Baked custards.
Baked apples.
Milk puddings—rice, semolina, cornflour, blancmanges, macaroni.

Stewed fruits or fruit shapes—made by adding gelatine dissolved in a little hot water and added to the fruit.

"Fruit Salad"—stewed apples with passion fruit, etc., bottled fruit left from family meal. A piece of grease-proof paper put under the lid when packing fruit will make it fit tightly and prevent spilling.

Tomato shape.
Jellied beetroot.
Meat or fish shape or brawn.

Salads—lettuce leaves, cress, short sticks of celery, radishes, pieces of carrot, beetroot, cucumber, cubes of cheese. Do not shred the ingredients, but cut into conveniently-sized "chunky" pieces.

Jellied soups—These are very good, and where it is possible, can be heated in the winter and are very welcome on cold days.

Allan Thompson
Standard I
School

[*Sparrow Industrial Pictures photo.*

Lunch packed into small box with each item of food wrapped separately.

Lunches

s made of wholemeal spread with beef dripping, thin slices of meat, with roughly-chopped parsley.
Sultana wholemeal scones, with butter.
Peanut biscuits.
A carrot—an apple.
Bottle of milk.

2. Cornish pastie made with wholemeal pastry and containing meat, leek, carrot, and potato.
Baked fruit cup in jelly jar.
Lettuce leaves and tomato.
Small bottle of lemon or other fruit syrup.

This lunch uses no butter; the fats are provided in the pastry and meat. Both dishes could be prepared the day before, thus saving time in the morning.

3. Date loaf spread with cottage cheese.
Brown bread sandwiches with cold bacon. (Fry a little extra at breakfast, cut in small strips when cold, and use the bacon dripping in place of butter).
Lettuce leaves and carrot, or orange if obtainable.
Bottle of milk.

4. Tomato mould made from home-bottled tomatoes.
Brown bread and butter.
Cheese scones.
Wholemeal fruit cake.
Pear, sticks of celery.
Bottle of milk.

5. Brown bread and meat paste sandwiches with lettuce.
Semolina shape (in jelly jar).
Small package of raisins, dates, or sultanas.
Bran biscuits.
Bottle of fruit juice syrup.

(When fresh fruit is scarce use the fruit juice for drinks and give dried fruit, if possible).

Some Useful Recipes

WHOLEMEAL FRUIT CAKE.

3oz. butter, 1 egg, 8oz. wholemeal, 3oz. raw sugar, ¾ cup milk, 1 teaspoon nutmeg, 1 cup sultanas, 1oz. lemon peel.

Cream the butter and sugar, then stir in the milk and beaten egg. Lastly add the wholemeal, nutmeg, and fruit. Cook in a moderate oven about 45 minutes. When cool ice and sprinkle with chopped walnuts.

BRAN BISCUITS.

1 level cup wholemeal, 1 heaped cup bran, 1 teaspoon baking powder, 3oz. sugar, ¼lb. butter, 1 egg, 1 teaspoon mixed spice (optional), pinch of salt.

Beat butter and sugar to a cream, add syrup (if used), beaten egg, then dry ingredients previously mixed. Roll out thinly, using bran on the board. Put on cold greased tray and bake in a moderate oven for about 15 minutes. (1 dessertspoon golden syrup may be added, in which case use a little less sugar).

Tomato mould is made by adding gelatine dissolved in a little hot water (or tomato juice) to home-bottled tomatoes, whole or quartered, soup, or puree in proportion of one dessertspoon gelatine to ½ pint tomato. Pour into jelly jar and leave to set. Don't forget to put a spoon in the lunch-box for this dish!

Cheese scones may be of the usual variety or you might like to try the next recipe, which is from the British Ministry of Food. If the filling is made too, there will be no need to butter the scones:—

CHEESE AND POTATO SCONES.

½lb. flour, ¼lb. cooked mashed potatoes, ¼lb. grated cheese, 4 level teaspoons baking powder, salt, milk to mix.

Filling: 4oz. grated cheese, 1 tablespoon chopped parsley, salt and pepper, milk.

Put the potato into the flour, add salt and baking powder. Stir in cheese and mix to soft dough with milk. Roll out ¾in. thick and cut into shapes. Bake in hot oven for 15 minutes.

Filling: Blend cheese with a little milk, add parsley and seasoning, and spread on split scones.

CORNISH PASTIES WITH WHOLEMEAL PASTRY.

1 cup wholemeal (8oz.), 3 to 4oz. dripping, 1 teaspoon baking powder, salt, water.

Make in the usual way—roll out and cut into rounds using small saucer for cutting guide. Place on filling made of raw meat cut in small dice, thinly-sliced leek, small cubes of carrot and potato, salt and pepper. Any variations of vegetable can be used, including cooked dried peas and beans and finely-shredded raw cabbage. Wet the edges and draw together over the top—flute the edges and bake until the meat is cooked and the pastry browned.

As a change potato pastry rolls could be made. The following recipes also come from the Ministry of Food and have been used in the Workers' Canteens:—

POTATO PASTRY SNACKS.

2oz. fat, 4oz. cooked mashed potato, 8oz. flour, ½ teaspoon salt, water if necessary.

Rub fat into flour, add potato and salt, and, if necessary, enough water to make a stiff dough. Roll out, cut into oblongs, place on a filling, damp the edges, fold over, and bake 20 minutes until filling is cooked and pastry browned.

Fillings: 1. ¾lb. sausage meat, 4oz. grated carrot, 1 tablespoon chopped parsley.

2. ½lb. mixed raw vegetables, shredded or chopped, ¼lb. cheese grated, 1 tablespoon chopped parsley, 2 level dessertspoons breadcrumbs, salt and pepper.

3. 6oz. mashed cooked fish, 1 tablespoon chopped parsley, squeeze lemon juice, 1 tablespoon salad dressing.

BAKED FRUIT CUPS

These can be made for the family dessert—make extra ones for the following day's lunches:—

Melted butter, mild-flavoured dripping, or vegetable fat, cornflakes, cooking apples, gooseberries, diced rhubarb, or other soft fruit, milk and egg custard.

Run melted fat round cups or small baking dishes; line with cornflakes. Peel and core apples, cut in halves, and place one half in each prepared dish, round side down. Pour custard, made as for baked custard, round each half apple, but do not cover. Bake in moderate oven until custard is set and fruit tender.

BACK LOGS

THERE is, I am told, an old belief among lovers of a fire that all the lovely colours that ever visited a tree in its lifetime are seen as it does its last service to man as a back log. Certainly, the pinks and mauves and purples of dawn are here in our fire to-night; the burning brightness of the sun, the angry black that suggests thunder-clouds, the crimson sunset, the clear transparency of stars.—**Rita Snowdon in "A Thousand Sunrises."**

Birds and Bush

I LIKE to see birds flying free. The tuis came into our orchard last spring—they seem to be increasing the last few years. We have some nice patches of native bush, so we see wild pigeons and kiwis, too. The dear little fantails and shy white-eyes hop about in the trees as I dig the garden. People must plant more native trees if they want to enjoy the birds' company.

Have you ever seen a white-eye's nest? My father once found one hanging on a branch. It was shaped like a pocket and the clever birds had built a verandah over the entrance to the nest.—**"Scotty."**

MARY'S AT HOME

I AM enjoying the sociologists' articles very much—we need more of such reading matter. I hope these are the first of a series. I have just finished painting the house inside and out, with the exception of the table and chairs, which are to have a new coat of cherry enamel. I did the kitchen-cum-living-room cream with grey door and surrounds, and it looks quite nice. I am going to do the furniture a little later on.—**"Biddi-Jan," Sumner.**

ANOTHER lovely cover design. I've been admiring each new illustration as it appears—each one is so appropriate. At the beginning of each new year I stop and think of the 12 months ahead and wonder what they hold in store. As the old year wanes I count the achievements won. Last year was certainly an eventful one. Peace has been gained and our loved ones are now home once more. We had a record number of climatic setbacks—summer floods; a 90-mile-an-hour wind; heavy snow; severe frosts and hailstorms. Canterbury was well battered. I wonder what 1946 has for us; yet if we knew, we'd lose courage to face the misfortunes, while the happier events would lose their lustre.—**"Clara Jane," Rakaia.**

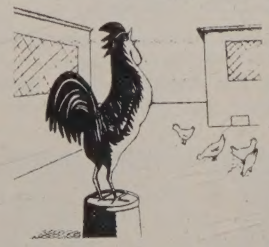
THE talk on trees was very much appreciated. The view from this window at the moment is most inviting. A row of apple trees, heavy with fruit, runs down to the gate, and a young walnut bearing its first fruit hangs over the bach on the left, while beyond that is a lovely Satsuma plum. Perhaps my love of trees sounds rather like cupboard love, but I am also fond of the high hedge of pines and macrocarpas sheltering the house from the wind. I couldn't live in a house set down in the middle of a bare paddock without any trees. Fortunately we have lots of trees and native bush here.—**"Brynmawr," Aramoho.**

I ENJOY your competitions very much, and though I cannot always find time to send in an entry, I look forward eagerly to reading your pages when the "Journal" comes to hand.—**"Francisca," Westland.**

OURS was a quiet Christmas. I only wished that we could have sent half the good things we had to eat home to England, so that everybody there could have had more Christmas fare. My relatives, writing from London, said that gas was so short they wondered if they would be able to cook anything even if they got special meat for Christmas. Logs only a little thicker than twigs were 18/- a hundred—this in mid-winter, with fog as well.—**"Tiggetty Boo," Kati Kati.**

THIS year will be a very interesting one in which we farmers must try and be more loyal to our calling and become more united.—**"E.S.," Masterton.**

IT is strange how sensitive one's hearing is to unaccustomed sounds, especially when one is staying in the country. The concert begins early in the morning with roosters crowing; then dogs bark, a farmer's shrill whistle is heard, and very soon the sound of the cows near the milking shed. Later, you feel, as well as hear, the throb of the machines, and you know that the day's work has begun.—**"Alison Grey," Tauranga.**



YOU once mentioned that you wished you were gifted enough to record with pencil or brush the beauties of nature; you certainly convey those beauties to your readers through your wonderful word pictures. They are treasures, also the lovely photographic illustrations accompanying them. We do appreciate the "Good Neighbour." As for improving rural living, a journal such as this does much for us countryfolk. I think that if we are mentally happy we are not in such great need of those super conveniences that we cannot all get.—**"Clara Jane," Rakaia.**

My heart leaps up when I behold
A rainbow in the sky.
—Wordsworth.

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JUST a word in appreciation of your pages. I love the little friendly pars of the readers. I don't know what others think, but to me they are the most interesting part of the "Journal." I liked, too, your Christmas letter.—**"Chatterbox," Oxford.**

There is blossom in the garden
And music in the trees,
So let all thoughts of sadness
Be scattered on the breeze.
—**"Anne's Mother," Thames.**

I AGREE with "New Chum" about the use of carpentry tools. While my husband was out haymaking I thought I would make a milking stool—one not too high and yet not too low. I managed the sawing and hammering quite well and was very pleased with its appearance. Alas! when I sat on it to show hubby how clever I had been, it collapsed. I had nailed the sides to the seat, instead of having the seat complete on top. My pride in myself collapsed at the same time! Hubby was quite kind about it, but he still hasn't made me the kind of stool that I like.—**"Homespun," Halcombe.**

I WOULD like to join your "At Home," please. I am a new subscriber to the "Journal" and enjoy its pages immensely. The first pages I look for are the "At Home," and then the poultry notes (fowls are my hobby), and last, but by no means least, the recipe section, from which I have made some delightful dishes and also nice biscuits, much to the pleasure of my family.—**"Just a Farmer's Wife," Opunake.**

TRANQUILLITY

The sea lies opal-smooth. The wind
Blows apart the tapestry of mist
To show a gloom of amethyst
Above the silver edge of sky, and frees
White tides of blossom from the rain-wet trees.
A tui's dream-entangled note
Lilts to sudden beauty and is still;
But here upon this lonely hill
Is only quietness, cloud-shadowed, cool
As water-lilies in a shallow pool.
Here rebel pain and turmoil have no part:
Tranquil my desire, serene my heart.
—**Enid B. V. Saunders.**

THE holiday season is over and we have had a happy, though busy, time. The weather was not at all seasonal and fires were very welcome. My visitors have all left now and I miss them, but happy memories of friendly chats remain to carry me on my way.—**"Effie," Murchison.**

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IT is a lovely day today and my two small children are playing outside. The menfolk are away fencing, so things are peaceful. We have several male friends whose Christian name is Jim. Recently, son, aged 3½, asked me where Jim Kana (gymkhana) lived! We are having one here soon, and he had heard a lot of talk about it and got his vocabulary a little mixed.—**"Romulea," Whiteman's Valley.**

ONE is never tired of the Christmas story and I would like to thank you for your presentation of it in your Christmas letter. Isn't it lovely how the children delight in carols learned so thoroughly at school? My small lad can shame me in my efforts—he is word perfect. Truly, the education of the young is making headway in a remarkable manner.—**"Glorianna," Hamilton.**

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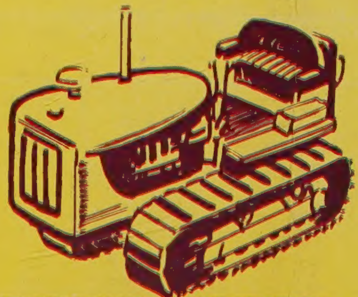

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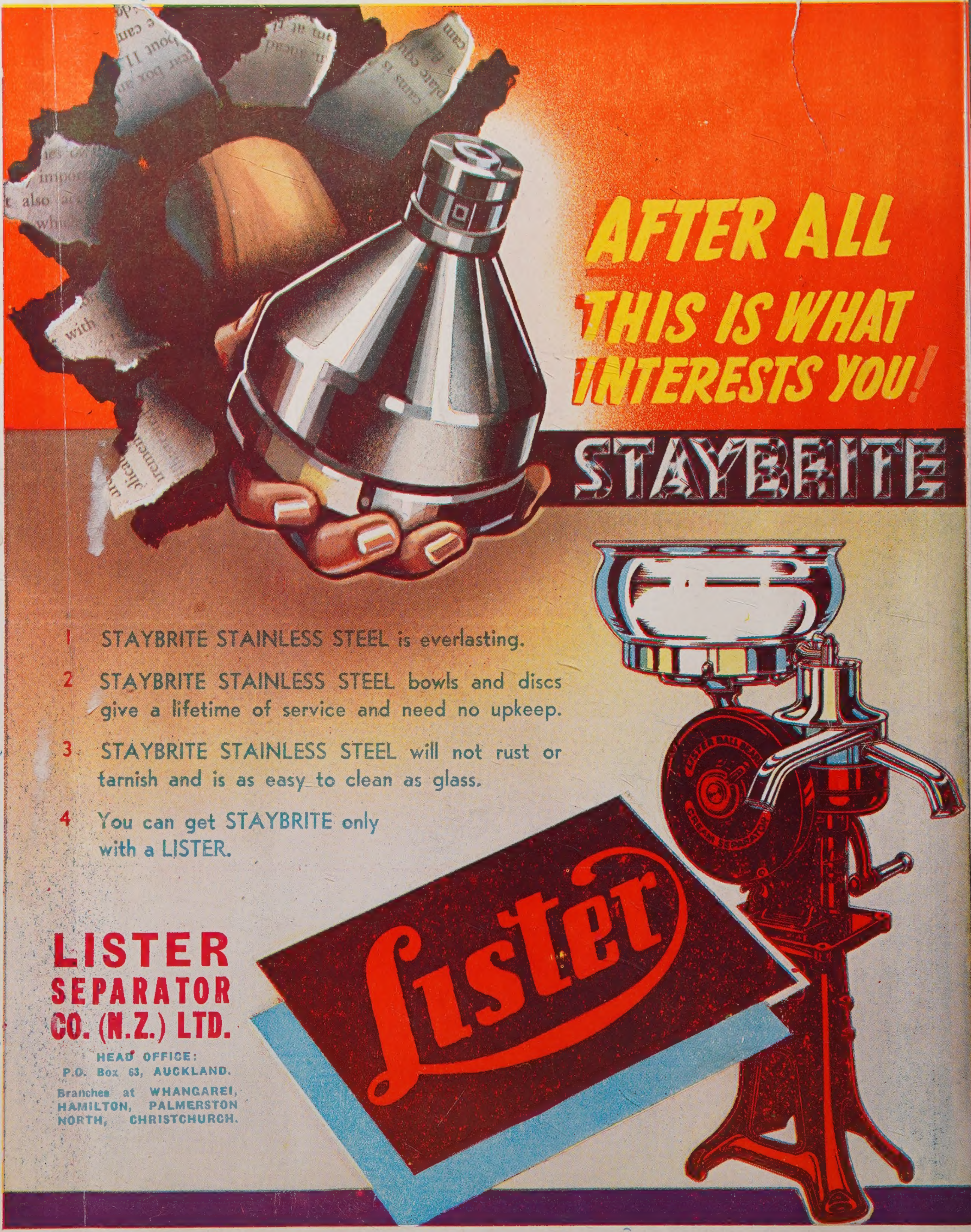
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